

STATE OF ARKANSAS
Arkansas Geological Survey
GEORGE C. BRANNER
STATE GEOLOGIST

ARKANSAS STREAM GAGING REPORT 1

Stream Gaging in Arkansas
from 1857 to 1928

By

W. S. FRAME

Acting District Engineer, 1928—1929,
United States Geological Survey



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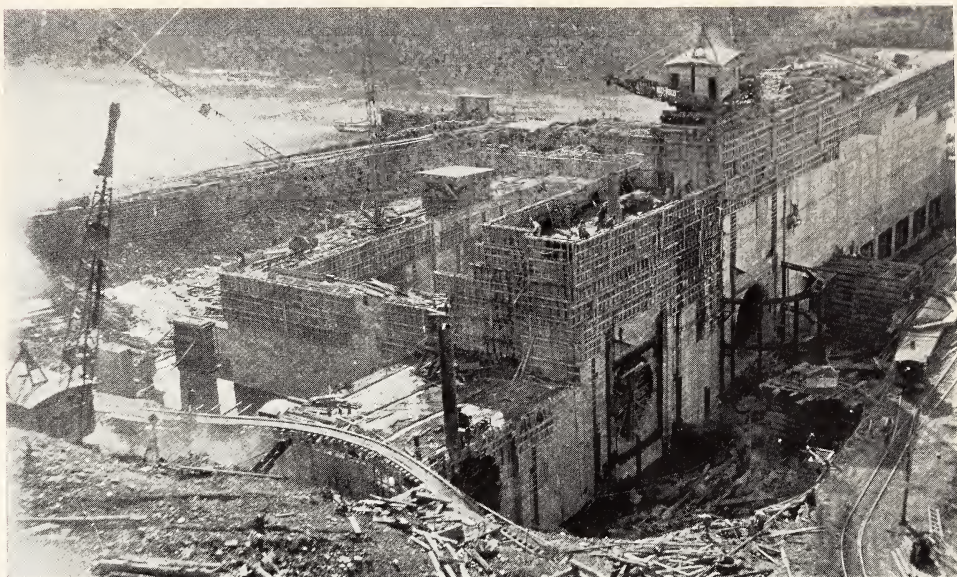


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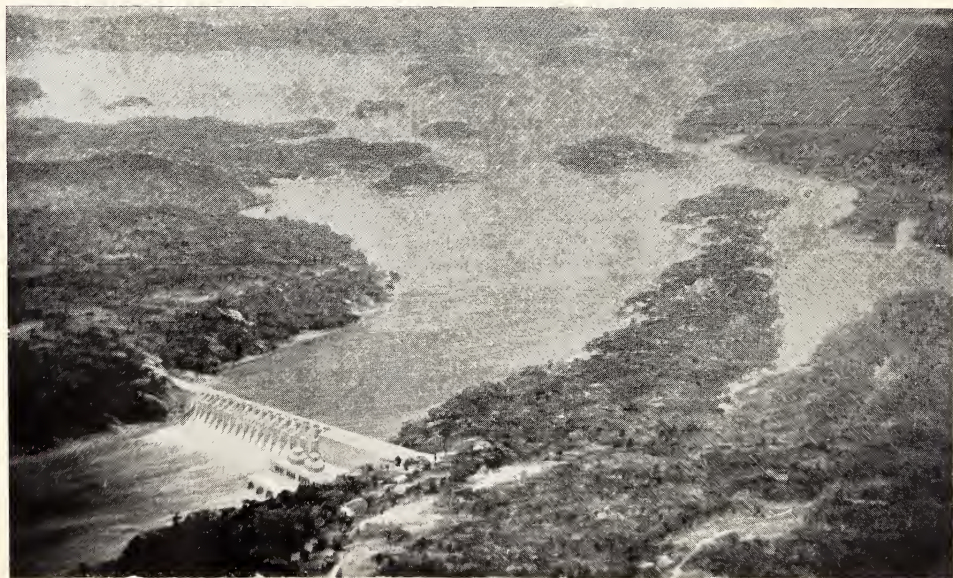




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CARPENTER DAM, OUACHITA RIVER, SOUTH OF HOT SPRINGS, DECEMBER, 1929
(ARKANSAS POWER & LIGHT COMPANY)



CARPENTER DAM AND PLANT, OUACHITA RIVER, SOUTH OF HOT SPRINGS
(PHOTOGRAPH OF OIL PAINTING OF PROPOSED DAM)

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LETTER OF TRANSMITTAL

ARKANSAS GEOLOGICAL SURVEY

LITTLE ROCK, ARK., *October 30, 1930*

HON. HARVEY PARNELL,
*Governor, State of Arkansas,
Little Rock, Ark.*

Sir:

I have the honor to submit herewith the report, Stream Gaging in Arkansas from 1857 to 1928, by W. S. Frame, formerly Acting District Engineer, Water Resources Branch, U. S. Geological Survey.

The systematic development of the commercial water power of the rivers and streams of Arkansas rests primarily on the availability of dependable stream gaging data. Intelligent flood control also is dependent to a considerable degree upon the existence of such data. In addition, discharge measurements from stream gaging records are needed for the development of river navigation and for the determination of water available for municipal or industrial uses. Up to the year 1927 most of the stream gaging records made in Arkansas had been kept in a more or less disconnected way, many of them by individuals and firms, and no comprehensive and continuous stream gaging program had been undertaken by the State or Federal Governments.

The present report is a compilation in one volume of a large number of scattered records from 1857 to 1928, which have not been easily accessible to the public.

Co-operative stream gaging with the Federal Government, arranged by the State Geologist and the Director of the U. S. Geological Survey is now in effect and useful records are being collected. As more funds can be provided for this work by this State they will be matched by federal funds, and the scope of the work will be broadened until the State is adequately covered. In this way a comprehensive stream gaging program will become part of a permanent state and federal service. It is planned to publish the results of all stream gaging annually, so that they may be available to all concerned.

It is significant to consider the basic facts concerning the available and developed water power in Arkansas at the present time. The following table of primary and secondary horse power of the streams of Arkansas which may reasonably be expected to provide major power has been compiled from estimates furnished by C. S. Lynch, Charles LeVasseur, William Crooks, and E. E. Bonewits.

53085

Stream	Number of dams	Primary power available 100% of the time (H. P.)	Economic secondary power available less than 100% of the time (H. P.)	Total (H. P.)
White River.....	1	194,000	74,000	268,000
North Fork.....	1	66,500	8,700	75,200
Buffalo River.....	1	21,000	5,400	26,400
Ouachita River.....	3	54,000	0	54,000
Little Red River.....	3	9,000	40,000	49,000
Caddo River.....	1	3,500	20,000	23,500
Spring River.....	5	5,000	3,000	8,000
Strawberry River.....	2	6,000	3,000	9,000
Cossatot River.....	1	1,200	3,000	4,200
Little Missouri River.....	1	1,000	3,000	4,000
Fourche La Fave.....	1	3,500	3,000	6,500
Total.....	20	364,700	163,100	527,800

The hydro-electric plants operating or under construction at the present time in Arkansas are as follows:

River	Name of project	Located near	Operated by	Primary power available 100% of the time (H. P.)	Economic secondary power available less than 100% of the time (H. P.)	Installed generator capacity (H. P.)
Illinois Bayou.....	Russellville Dam	Russellville....	Ark. P. & L. Co....	0	835	835
Spring.....	Dam No. 1.....	Mammoth Sprg.	Ark.-Mo. Power Co.	135	645	550
Spring.....	Dam No. 3.....	Mammoth Sprg.	Ark.-Mo. Power Co.	465	735	750
Ouachita.....	Rommel Dam...	Malvern.....	Ark. P. & L. Co....	1,000 ²	16,000 ³	12,100
Ouachita.....	Carpenter Dam ⁴	Hot Springs...	Ark. P. & L. Co....	4,800 ⁵	30,600 ⁷	75,100
Total.....				6,400	48,815	89,335

¹ Now under construction.

² When Carpenter Dam is in operation, will increase this figure to 2,500 H. P.

³ When Carpenter Dam is in operation, will decrease this figure to 14,000 H. P.

⁴ When Blakely Dam is in operation, will increase this figure to 8,100 H. P.

⁵ When Blakely Dam is in operation, will decrease this figure to 0.

⁶ When Blakely Dam is in operation, will increase this figure to 20,800 H. P.

⁷ When Blakely Dam is in operation, will decrease this figure to 0.

The primary and secondary water power in Arkansas which is either developed or in process of development, compared with the estimated potential power available, is set forth in the following table:

	Developed water power in Ark. (H. P.)	Estimated potential economic water power available in Ark. (H. P.) (see above)	Per cent developed water power	Estimated potential water power available in Ark. (H. P.) (U. S. Geol. Survey, 1928)	Per cent developed water power
Primary.....	6,400 ⁸	364,700 ⁹	1.2	201,300 ¹⁰	3.1
Secondary.....	48,815 ⁹	163,100 ⁹	29.9	299,300 ¹¹	16.3
Total.....	55,215	527,800	10.5	500,600	11.03

⁸ For water available 100% of the time.

⁹ For water available less than 100% of the time.

¹⁰ For water available 90% of the time.

¹¹ For water available 50% of the time.

The above estimates indicate that a little more than one-tenth of the available water power of the State is now actually or will soon be developed. It is obvious, therefore, that there is adequate undeveloped water power in Arkansas at the present time to meet any industrial needs which may arise for some time to come.

The progressive development of the available water power of Arkansas, insofar as it is based on sound economics, will exercise a

material influence upon the industrial development of the State by providing a supply of power adequate to growing needs. In addition, provision for flood control and for the development of river navigation are of especial importance at present in connection with the growth of this State.

Respectfully submitted,

GEORGE C. BRANNER,
State Geologist.

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STREAM GAGING IN ARKANSAS FROM 1857 TO 1928

By W. S. FRAME

INTRODUCTION

SOURCES OF INFORMATION

This report has been compiled to make available in convenient and condensed form all the information relating to the flow of streams in Arkansas that has been collected by public agencies. This information is essential in planning the development, use, and control of the streams of the State for the utilization of water power, for flood control, navigation, water supply, sanitation, and other purposes.

Although all available records of the flow of streams in the State have been brought together in this report, most of the periods covered are short and some of the areas served by the streams are small. For these reasons the fullest value of the data presented can be obtained only by continuing the records now being collected and by extending the work to other streams. This report is therefore intended to serve as a basis for future reports, which will be issued annually as additional data are obtained.

The greater part of the material in this report has already been published in State and Federal reports, many of which are now out of print. The records given in these reports have been used freely and the basic facts they contain have been presented, some of them rearranged to conform to present methods of publication. Most of these records were collected by the United States Geological Survey from 1903 to 1906 and by the Geological Survey of Arkansas, in cooperation with the United States Geological Survey, in 1909 and 1910. Many of these early records are, unfortunately, useful only for making rough preliminary investigations because of the short time that they cover and the small number of observations that could be made during that time. However, the basic data now available are all presented in this report. Data now being collected for certain streams will throw additional light on these early records and increase their value.

From 1911 to 1926 very few stream-flow data were collected in Arkansas. Some records were obtained through the cooperation of private companies, but no comprehensive surveys were made.

In 1927 stream gaging was undertaken in Arkansas by the State Geological Survey in cooperation with the Water Resources Branch of the United States Geological Survey. This cooperative arrangement not only procured financial aid for the State in this work but

gave assurance that the work would be done by an experienced personnel according to methods and standards of accuracy developed during a period of forty years. In the short time since this arrangement was made, records have been obtained at nineteen gaging stations in the State. At most of these places other interested agencies, both private and public, have also cooperated, either by furnishing records or by assisting in their collection. The records at twelve of these new stations are here published for the first time.

NATURE, USES, AND VALUE OF STREAM-FLOW RECORDS

PRESENT CONDITIONS IN THE STATE

The streams of Arkansas are among the most valuable of her natural resources. They constitute the only natural resources that is not exhausted by use. Water is necessary for all human activities. Its abundance is often one of the most important factors in the development of a community; its scarcity might limit the growth of a community.

TABLE 1.—MEAN MONTHLY AND ANNUAL PRECIPITATION IN ARKANSAS IN INCHES
(Records of the United States Weather Bureau)

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1891..	5.34	2.92	5.10	2.75	2.78	3.71	7.24	2.75	0.94	0.65	5.56	4.69	44.43
1892..	2.48	3.47	3.44	6.98	9.52	3.87	3.58	4.39	2.14	3.26	5.83	8.79	57.75
1893..	1.13	4.05	3.55	7.16	9.71	5.20	2.94	3.08	3.75	1.30	4.21	1.83	47.91
1894..	3.63	6.32	9.84	6.18	3.40	1.39	3.98	4.63	3.56	1.52	1.12	3.48	49.05
1895..	5.19	0.71	5.39	1.99	3.91	5.94	7.34	2.64	1.36	1.44	4.82	3.96	44.69
1896..	4.09	3.30	5.28	3.65	3.54	1.91	1.61	2.32	3.25	3.59	4.34	0.84	37.72
1897..	6.78	2.59	9.76	4.14	2.13	3.46	3.25	2.59	0.60	2.01	2.82	6.00	46.13
1898..	7.93	2.08	5.96	3.09	6.44	4.86	4.25	4.35	7.35	5.44	3.20	1.87	56.82
1899..	5.91	2.18	2.97	3.28	6.45	2.74	5.14	2.04	1.21	2.88	2.61	4.08	41.49
1900..	2.69	5.06	2.50	4.98	3.69	7.10	4.46	2.95	4.25	4.31	4.28	2.76	49.03
1901..	2.21	2.18	4.67	3.82	2.95	1.44	2.49	2.95	3.08	2.07	2.99	4.42	35.27
1902..	4.13	2.60	5.34	2.87	4.34	5.27	4.49	2.55	5.06	2.68	6.66	5.71	51.70
1903..	2.60	7.63	5.56	1.86	7.47	2.53	3.86	4.34	2.47	2.22	0.64	3.44	44.62
1904..	3.81	2.47	5.64	3.88	3.39	7.14	4.43	2.81	2.46	0.94	1.38	5.10	43.45
1905..	4.58	2.55	5.31	6.29	9.58	5.90	7.60	3.73	3.90	4.49	3.28	4.96	62.17
1906..	5.19	2.21	5.69	2.55	4.71	4.60	5.96	4.92	6.24	2.38	5.90	5.64	55.99
1907..	5.80	2.77	3.22	5.44	9.48	4.48	1.96	2.92	2.22	3.03	5.71	2.70	49.73
1908..	3.75	5.26	3.79	6.32	7.05	3.85	3.00	4.48	4.00	0.48	5.40	1.50	48.88
1909..	1.79	5.41	3.71	4.52	6.76	4.08	2.51	1.27	2.84	2.15	3.75	5.26	44.05
1910..	2.59	3.66	1.39	5.14	6.56	4.85	5.46	3.92	2.41	5.19	0.47	3.57	45.21
1911..	1.02	4.31	2.17	9.86	1.11	2.53	4.83	8.19	3.67	1.67	3.18	7.00	49.54
1912..	3.01	2.80	7.86	8.14	2.41	5.83	2.82	3.39	2.40	2.97	1.66	2.63	45.83
1913..	8.45	3.74	4.74	4.91	3.32	1.68	4.31	1.62	10.10	5.41	2.47	3.26	54.01
1914..	1.57	4.23	5.13	4.57	3.34	1.00	2.69	6.81	3.19	1.74	2.32	6.26	42.85
1915..	4.38	4.47	3.54	2.96	5.58	4.92	2.40	10.44	1.43	2.83	5.40	4.73	53.08
1916..	9.39	1.78	1.93	3.65	3.56	5.15	2.09	2.63	3.40	2.30	2.95	3.35	42.18
1917..	3.66	1.93	5.32	5.69	3.15	4.87	5.10	4.10	1.76	1.89	1.96	1.29	40.72
1918..	4.39	1.17	1.31	7.63	3.01	3.55	1.53	3.90	4.63	3.99	3.91	5.62	44.64
1919..	3.00	3.34	5.47	3.56	6.01	5.11	1.91	4.29	2.72	10.90	6.27	1.94	54.52
1920..	6.49	1.26	5.31	5.49	8.17	3.41	4.22	4.08	3.56	4.39	1.95	5.95	54.28
1921..	2.07	3.59	6.55	7.87	2.25	4.84	2.42	5.46	3.38	0.72	5.53	2.78	47.46
1922..	2.63	4.89	8.58	5.54	5.00	2.64	4.12	1.90	1.25	1.47	3.89	4.59	46.50
1923..	5.78	4.66	5.04	6.30	8.24	5.20	3.53	2.43	5.56	3.53	3.34	6.24	59.85
1924..	3.19	2.26	3.27	4.99	4.64	3.64	2.35	2.40	3.99	0.29	2.36	3.65	37.03
1925..	2.68	3.37	1.69	2.62	1.88	2.08	4.99	1.81	5.96	7.73	5.67	1.71	42.19
1926..	4.69	2.02	5.57	2.65	2.42	2.60	3.55	5.50	3.99	5.77	3.33	7.15	49.19
1927..	5.41	2.62	7.24	12.93	6.54	6.50	4.25	6.01	3.37	3.13	3.67	4.18	65.85
1928..	2.05	2.23	2.53	8.52	3.60	9.44	3.66	4.62	0.45	4.74	4.25	4.41	50.50
Means	4.09	3.27	4.77	5.13	4.95	4.19	3.85	3.82	3.37	3.09	3.66	4.14	48.32

The value of any stream depends to a large extent on the quantity and distribution of its flow. Precipitation is the primary source of all streams and is the most important factor influencing their flow. Systematic records of precipitation have been collected for many years by the United States Weather Bureau. The average monthly and annual precipitation in Arkansas from 1891 to 1928 is shown in Table 1, page 2, and the average annual distribution over the State, as shown by the records of the United States Weather Bureau up to and including the year 1925, is indicated in Figure 1. Other factors, however, such as topography, geology, shape of drainage basin, vegetation, condition and previous degree of saturation of soil, and evaporation, play important parts in governing the quantity of rainfall that runs off into the streams and the distribution of the flow. For this reason rainfall records alone cannot be depended on to give a reliable indication of the flow of a stream. The best and only consistently accurate method of determining stream flow is to make a series of records of the flow extending over several years.

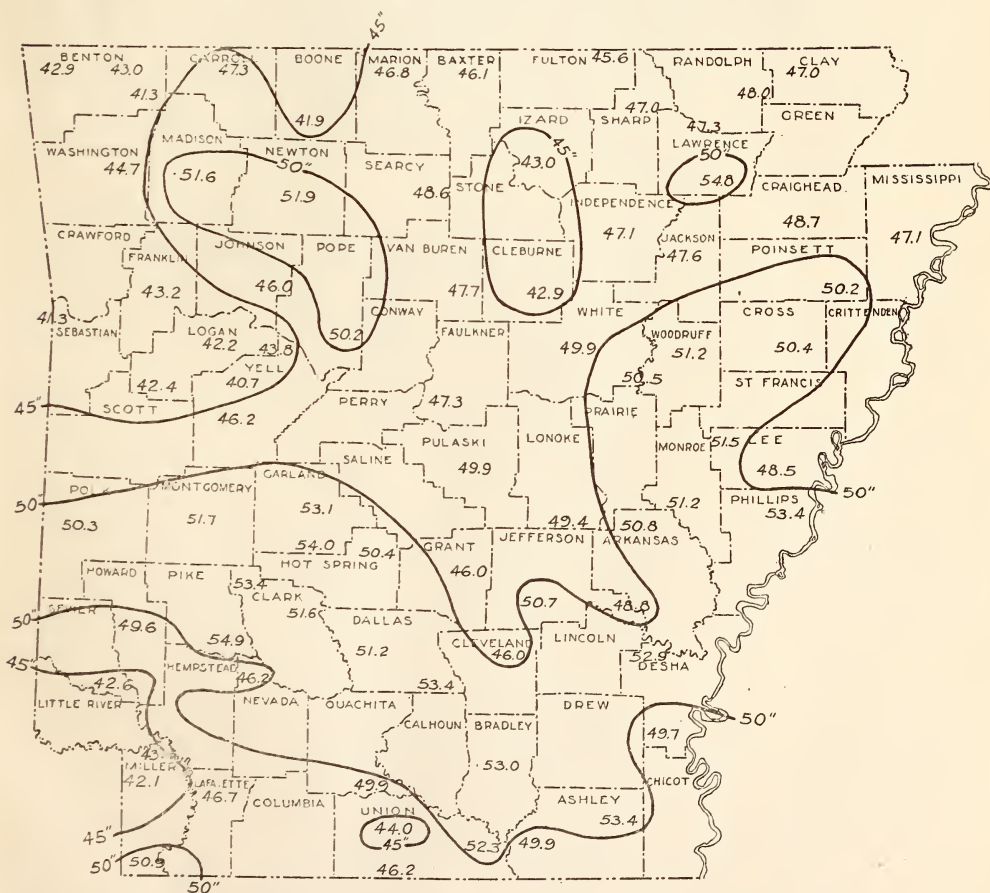


FIGURE 1.—Map showing the average annual precipitation in Arkansas in inches up to and including the year 1925.

Because of the increase in population and of improved sanitation and standards of living more and more water is steadily being required for domestic use. The supply from wells is proving inadequate to meet the needs of our growing cities, and they are looking for supplies of surface water. Many cities in our neighboring State of Oklahoma have also reached this point in their growth. As the population of the cities of Arkansas increases many of them must obtain more abundant supplies. Others will find it necessary to abandon their present source of water because of contamination or of unsuitable quality. When adequate stream-flow records are available these cities will know where to turn. They will not be subject to the hazard of building expensive waterworks only to find their investment nullified because the supply is inadequate.

The pollution of our streams increases with increase in population and in industrial development. A certain amount of sewage and industrial waste may be discharged into streams without harmful results, but during periods of extremely low flow some streams may become so polluted as to form a menace to public health. Knowledge of the low-water discharge of such streams is necessary to eliminate contamination and will be useful to engineers designing plants for the treatment and disposal of sewage. This problem is already receiving the attention of health authorities, to whose work records of stream flow are essential.

Probably the records of stream flow in northern and western Arkansas will be most useful in determining the possible water-power development in these regions. The amount of power that may be obtained from a stream depends only on the fall that can be utilized and the quantity and distribution of the flow of water that runs off. The fall that can be utilized depends on the topography and geology of the region and can be readily determined. The quantity of water varies from day to day, season to season, and year to year. It can be adequately determined only from a series of records of stream flow extending over several years. Where such records are available, water-power development may proceed at a rate commensurate with other industrial development. Where no records of stream flow are available the development of water power will be delayed, at a loss to the region and to industry as a whole. The collection of these records is properly a governmental function, for capital cannot be expected to spend many years in preliminary investigations in unexplored regions when investments in other regions and other kinds of development promise more certain and more immediate returns.

The capacity of the water-power projects that can ultimately be developed in Arkansas is estimated at 500,600 horsepower. At present only 14,235 horsepower is installed, as shown in the following table:

TABLE 2.—DEVELOPED WATER POWER IN ARKANSAS

River.	Name of project.	Located near	Operated by	Installed generator capacity in H. P.
Illinois Bayou.....	Russellville Dam.	Russellville.....	Ark. P. & L. Co..	835
Spring.....	Dam No. 1.....	Mammoth Spring	Ark.-Mo. P. Co..	550
Spring.....	Dam No. 3.....	Mammoth Spring	Ark.-Mo. P. Co..	759
Ouachita.....	Rommel Dam....	Hot Springs.....	Ark. P. & L. Co..	12,100
Total.....				14,235

EQUIPMENT

Name of Project	Present Generator Installation
Russellville Dam.....	{ One 230 K. V. A. generator
Dam No. 1.....	{ One 575 K. V. A. generator
Dam No. 3.....	One 559 K. V. A. generator
Rommel Dam.....	One 759 K. V. A. generator
	Three 3,009 K. W. generators

On Ouachita River the Arkansas Power & Light Company has obtained a license from the State Railroad Commission and the Federal Power Commission to build two more dams above the Rommel Dam. Construction is now under way on the first of these. The three dams will develop 54,000 primary horsepower estimated on a 24 hour basis and it is expected that they will give practically complete control of the upper Ouachita River. The power will be fed into the extensive transmission system of central, southern, and eastern Arkansas, and its abundance will be one of the many inducements to manufacturers to locate in this region.

The popularity of Hot Springs and vicinity, already famous the world over, is being enhanced by these developments. The lakes formed by these dams will become wonderful fishing, boating, and bathing resorts. These lakes, combined with the rugged topography, the healthful climate, the curative waters, and good roads, will attract additional thousands of tourists to this popular resort.

Stream-flow records have played their part in the development of the Ouachita River. Records have been collected at the expense of the Arkansas Power & Light Company since 1922 and have been of inestimable value in proving the practicability of the projects and in furnishing data on which to base the design of structures. It is significant that this stream, on which we have the longest period of continuous discharge records in the State, is the first water-power stream to be developed on a large scale.

In northern Arkansas the White River Power Company has a license from the State Railroad Commission and has applied for a license from the Federal Power Commission for the construction of proposed dams on White River near Cotter and on the North Fork of the White River and on Buffalo River. The total installed capacity of these proposed developments will be about 370,000 horsepower. On the upper White River, in Missouri, the Forsyth development of the Empire District Electric Company, creating Lake Taneycomo, has an installed capacity of 18,500 horsepower, and final license has been

granted and construction commenced by the same company on a 190-foot dam at Table Rock, Missouri, above Lake Taneycomo, at which about 220,000 horsepower will be installed. These developments will make White River the most important power stream in this part of the country.

The benefits which the Lake Taneycomo region, in Missouri, is deriving from the Forsyth developments—comparatively small projects—will certainly be enjoyed to a much greater extent by the White River country of Arkansas when these developments are completed as proposed. The whole State will be benefited by the development of the extensive mineral and other resources of this region which the abundant power will make possible and by the stimulated use of electric energy, the attraction to industry, and the tourist trade which will certainly follow.

Capital would not have become interested in these projects without the data on the flow of these streams which have been and are now being collected. Without a knowledge of the stream flow the practicability of the projects could not be assured, the most comprehensive and economical scheme of development could not be determined, and the most economical operation after development could not be maintained. These developments, when completed, are certain to have a beneficial effect in controlling the floods on the lower White River. Stream-flow records will show definitely the benefits in this respect and may be of exceptional value in demonstrating the feasibility of controlling or partly controlling floods by reservoirs.

The Ouachita River and White River developments proposed are by far the largest in the State. Many other smaller developments are possible, however. Statistics show that industry is decentralizing. The movement is away from the large cities to the smaller communities that have the inducements of raw materials, labor, power, and climate. With this decentralizing movement in progress it is reasonable to expect that a number of these smaller projects can eventually be economically built to supply local industrial needs; or the power can be distributed to the constantly growing systems of transmission lines to supply their load requirements. Such streams as the Strawberry and Little Red Rivers, in the White River Basin; Piney, Mulberry and Fourche la Pave Rivers, in the Arkansas River Basin; Caddo and Little Missouri Rivers, in the Ouachita River Basin; and the Cassatot River, in the Red River Basin, all have attractive topographic features for water-power developments. On only two of these streams, however, have we begun to collect discharge records, so the stream flow is still unknown. Its determination will indicate the possibility of its economic utilization. The stream-flow work should be expanded as soon as possible to include these and other streams of the State, not alone to stimulate development of the sites that may prove to be practicable but to discourage investments



A. POWER DAM AND PLANT ON ILLINOIS BAYOU NORTH OF RUSSELLVILLE (ARKANSAS POWER & LIGHT COMPANY)



B. REMMEL DAM AND PLANT, OUCHITA RIVER NEAR MALVERN (ARKANSAS POWER & LIGHT COMPANY)



that are bound to fail because the water supply is inadequate. There have already been a number of failures of this kind, and their effect has been detrimental to the development of projects that are feasible and practicable.

Water is a necessity not alone for water power for producing electric energy. Modern steam-electric plants require large quantities of water for cooling their condensers. The 120,000 horsepower plant of the Louisiana Power & Light Company at Sterlington, on the Ouachita River, in northern Louisiana, uses practically the full low-water flow of this river (approximately 300 cubic feet per second) for cooling their condensers. The assurance of a sufficient and continuous supply of water is of utmost importance in the location of such a plant. Many industries also require considerable quantities of water in manufacturing processes, and the communities that want to attract such industries must show that they have sufficient water available. Stream-flow records will furnish this information.

Stream-flow records are used also in connection with studies of flood control, navigation, and drainage. Almost every year damaging floods occur in some part of Arkansas. The exceptional flood of 1927 caused damages estimated at \$40,000,000 in only the nineteen counties affected by the Arkansas River. Even the average yearly damage from floods in the State will be measured in hundred of thousands of dollars. Much work has been done and much more remains to be done to diminish this recurring loss. Knowledge of the quantities of water carried by the main streams and by their principal tributaries is essential to the conception of any intelligent and comprehensive plan for flood control.

Knowledge of the low-water flow is also necessary in controlling and using the stream for navigation. On such streams as the Arkansas River the low-water plane is constantly shifting. The stage of the river is not always a reliable indication of its navigability. H. S. Cole, of the United States Weather Bureau, has determined from data furnished by the United States Engineers, that in 1894 a stage of nearly four feet at Little Rock would have been necessary for a boat drawing two feet to pass from Little Rock to the mouth of the river, but in 1920 it could have passed at a stage of zero. Records of stream flow will form a valuable addition to gage-height data in determining the time and extent of such changes in the channel.

The value of stream-flow records in flood control and navigation projects is shown by the fact that the United States Army Engineers will have spent over \$300,000.00 in stream-gaging work throughout the United States during the fiscal year ending June 30, 1929, in connection with studies of flood control and navigation recently authorized by Congress.

Drainage districts in Mississippi and Poinsett counties are co-operating with the Arkansas Geological Survey in collecting infor-

mation concerning stream flow in their territory. This information is of much value to them in their flood control and drainage work. It shows definitely the increased carrying capacities of their artificial and leveed channels and will form the basis of design of additional works.

DEFINITION OF TERMS

The volume of water flowing in a stream—the “run-off,” or “discharge”—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miner’s inches, and discharge in second-feet per square mile; and (2) those that represent an actual quantity of water, as run-off in inches, acre-feet, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, and run-off in inches and acre-feet. They may be defined as follows:

“Second-foot” is an abbreviation for “cubic feet per second.” A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section one foot wide and one foot deep at an average velocity of one foot per second. It is generally used as a fundamental unit from which others are computed.

“Second-feet per square mile” is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

“Run-off in inches” is the depth to which an area would be covered if all the water flowing from it during a given period were uniformly distributed over the area. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

An “acre-foot,” equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of one foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined:

“Stage-discharge relation,” an abbreviation for “relation of gage-height to discharge.”

“Control,” a term used to designate the section or sections of the stream below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

EXPLANATION OF DATA

The gaging station records in this report cover the entire period to and including September 30, 1928. They have been arranged in years ending September 30 to agree with the standard practice of the United States Geological Survey. At the beginning of January



A. POWER DAM AND PLANT AT MAMMOTH SPRING (DAM NO. 1 OF THE ARKANSAS-MISSOURI POWER COMPANY)



B. POWER DAM AND PLANT ON SPRING RIVER, SOUTH OF MAMMOTH SPRING (DAM NO. 3 OF THE ARKANSAS-MISSOURI POWER COMPANY)



in most parts of the United States much of the precipitation in the preceding three months is stored in the form of snow or ice, or in ponds, lakes, and swamps, or as ground water, and this stored water passes off in the streams during the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; the run-off for the year beginning October 1 is therefor practically all derived from precipitation within that year.

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff gage or chain gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter. The general methods are outlined in standard textbooks on the measurement of river discharge.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage heights to these rating tables gives the discharge, from which the monthly and yearly mean discharge is determined.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

If the base data are insufficient to determine the daily discharge, tables giving daily gage heights and results of discharge measurements are published.

The description of the station gives information in regard to any conditions that may affect the permanence of the stage-discharge relations, such as the occurrence of ice, the use of the stream for log driving, the shifting of control, and the cause and effect of backwater. It gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives, in general, the discharge in second-feet, corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders the mean daily discharge may be obtained by averaging discharge at regular intervals during the day or by using the discharge integrator, an instrument operating on the principle of the planimeter and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height is highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge consequently larger than that given in the column headed "Maximum." Likewise, the column headed "Minimum" gives the mean flow for the day when the mean gage height is lowest. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow are based the computations recorded in the remaining columns, the terms used in which are defined on page 8.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (1) on the permanence of the stage-discharge relation and (2) on the accuracy of the observation of stage, measurement of flow, and interpretation of records.

A paragraph in the description of the station gives information regarding (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage readings, (4) frequency of gage readings, and (5) methods of applying gage heights to the rating table to obtain the daily discharge.

In the rating tables the notation "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined," within 15 to 25 per cent. These notations are very general and are based on the plotting of the individual measurement with reference to the mean rating curve.

The table of monthly discharge gives only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

ARRANGEMENT AND EXTENT OF RECORDS

The State of Arkansas is naturally divided into five main drainage basins, the St. Francis, White, Arkansas, Ouachita, and Red River basins. The records in this report are grouped under these five basins and are arranged in the order indicated, the stations on the main stream of each basin being given first in downstream order and then the stations on the tributaries in downstream order.

In addition to the records collected within the State, records made at five gaging stations on streams in Missouri that drain into Arkansas and that are maintained by the Missouri Bureau of Geology and

Mines in co-operation with the United States Geological Survey are also presented. These stations are all near the State line in the White River Basin and can be used to estimate very closely the flow of these streams as they enter the State. Additional information has been collected in the White and St. Francis River basins in Missouri, but it is not included in this report. It is available in the yearly water-supply papers of the United States Geological Survey and, in more compact form, in the publications of the Missouri Bureau of Geology and Mines.

PERSONNEL

This report was compiled and prepared for publication by the Arkansas Geological Survey under the direction of George C. Branner, State Geologist. The recent data were collected in co-operation with the United States Geological Survey under the general direction of N. C. Grover, Chief Hydraulic Engineer, and J. C. Hoyt, Chief of Division of Surface Waters, and under the immediate supervision of H. C. Beckman, District Engineer, assisted by V. L. Austin and A. L. Hill. The report was compiled by W. S. Frame, who was assisted by O. B. Johnson.

GAGING STATIONS

The following lists include information concerning the location, type of station, and intervals of reading of gaging stations on the streams of the State. The stations are arranged in six groups, as follows:

I. GAGING STATIONS NOW BEING MAINTAINED AND OPERATED BY THE U. S. GEOLOGICAL SURVEY IN CO-OPERATION WITH THE ARKANSAS GEOLOGICAL SURVEY AND PRIVATE AGENCIES

1. St. Francis River at Marked Tree, Ark.

In Sec. 35, T. 11 N., R. 6 E., 250 feet upstream from highway bridge at Marked Tree, Poinsett County. Staff gage, read daily.

2. St. Francis River Floodway near Marked Tree, Ark.

In SE. $\frac{1}{4}$ Sec. 10, T. 11 N., R. 6 E., at lock and dam of Poinsett County Drainage District No. 7, and 3 miles north of Marked Tree, Poinsett County. Staff gage, read daily.

3. Big Lake Outlet near Manila, Ark.

In SE. $\frac{1}{4}$ Sec. 9, T. 14 N., R. 9 E., at highway bridge at Big Lake, a station on the St. Louis-San Francisco Railway, and $3\frac{1}{2}$ miles southeast of Manila, Mississippi County. Chain gage, read twice daily.

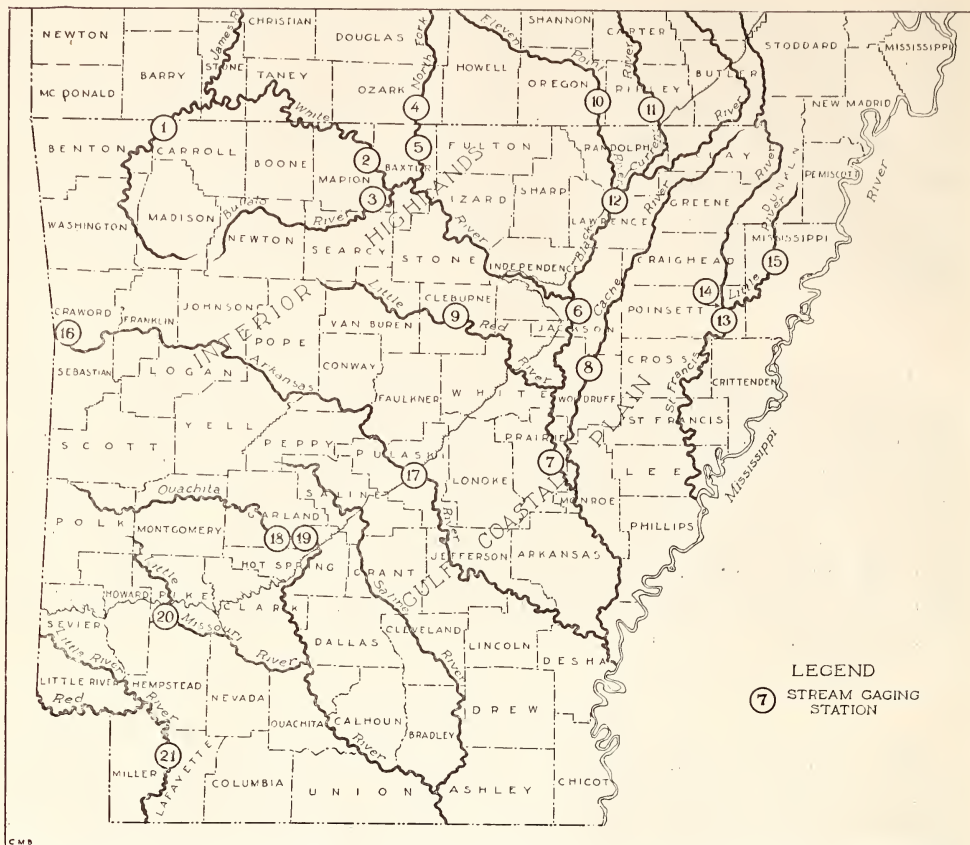


FIGURE 2.—Map showing stream gaging stations being operated in Arkansas and southern Missouri during the year ending September 30, 1929.

- | | |
|---|---|
| 1. White River at Beaver, Ark. | 12. Black River at Black Rock, Ark. |
| 2. White River near Flippin, Ark. | 13. St. Francis River at Marked Tree, Ark. |
| 3. Buffalo River at Rush, Ark. | 14. St. Francis River Floodway near Marked Tree, Ark. |
| 4. North Fork of White River at Tecumseh, Mo. | 15. Big Lake Outlet near Manila, Ark. |
| 5. North Fork of White River at Henderson, Ark. | 16. Arkansas River at Van Buren, Ark. |
| 6. White River near Newport, Ark. | 17. Arkansas River at Little Rock, Ark. |
| 7. White River at DeVall's Bluff, Ark. | 18. Ouachita River near Hot Springs, Ark. |
| 8. Cache River at Patterson, Ark. | 19. Ouachita River at Rammel Dam, near Malvern, Ark. |
| 9. Little Red River near Heber Springs, Ark. | 20. Little Missouri River near Murfreesboro, Ark. |
| 10. Eleven Point River near Bardley, Mo. | 21. Red River at Garland City, Ark. |
| 11. Current River at Doniphan, Mo. | |

NOTE.—For detailed information concerning the gaging stations in Arkansas see pages 11-16.

4. White River near Flippin, Ark.
In NW. $\frac{1}{4}$ Sec. 9, T. 19 N., R. 15 W., $2\frac{1}{2}$ miles north of Flippin, Marion County. Staff gage, read twice daily.
5. White River near Newport, Ark.
On line between Secs. 16 and 17, T. 11 N., R. 3 W., at Missouri Pacific Railway bridge, $2\frac{1}{2}$ miles southwest of Newport, Jackson County. Chain gage, read daily.
6. White River at De Vall's Bluff, Ark.
In Sec. 23, T. 2 N., R. 4 W., at highway toll bridge 1 mile northeast of De Vall's Bluff, Prairie County, and 8 miles below Wattensaw Bayou. Staff gage, read daily.
7. North Fork of White River at Henderson, Ark.
In SW. $\frac{1}{4}$ Sec. 26, T. 20 N., R. 12 W., at Smith's Ferry, a mile from Henderson, Baxter County. Bayou Creek enters from the left about $1\frac{1}{4}$ miles upstream. Staff gage, read twice daily.
8. Little Red River near Heber Springs, Ark.
In NE. $\frac{1}{4}$ Sec. 1, T. 10 N., R. 10 W., at county highway suspension bridge $\frac{1}{2}$ mile west of Tumbling Shoals store and postoffice and 4 miles northeast of Heber Springs, Cleburne County. Staff gage, read daily.
9. Cache River at Patterson, Ark.
In Sec. 6, T. 7 N., R. 2 W., at Missouri Pacific Railway bridge $\frac{3}{4}$ of a mile west of Patterson, Woodruff County. Staff gage, read daily.
10. Arkansas River at Van Buren, Ark.
In Sec. 24, T. 9 N., R. 32 W., at highway bridge at Van Buren, Crawford County, and $1\frac{1}{2}$ miles below Lee Creek. Chain gage, read daily.
11. Arkansas River at Little Rock, Ark.
In Sec. 3, T. 1 N., R. 12 W., at Main Street bridge in Little Rock, Pulaski County. Staff gage, read daily.
12. Ouachita River near Hot Springs, Ark.
In SW. $\frac{1}{4}$ Sec. 29, T. 3 S., R. 19 W., at Smith Ferry highway bridge, 1 mile upstream from Hot Springs Creek and 5 miles south of Hot Springs, Garland County. Chain gage, read twice daily.
13. Ouachita River at Rammel Dam, near Malvern, Ark.
In SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ Sec. 36, T. 3 S., R. 18 W., 700 feet below Rammel Dam of Arkansas Power & Light Company, $\frac{3}{4}$ of a mile above Cove Creek, and 9 miles northwest of Malvern, Hot Spring County. Recording gage.

14. Little Missouri River near Murfreesboro, Ark.

In SE. $\frac{1}{4}$ Sec. 13, T. 8 S., R. 26 W., at highway bridge 1 mile below Muddy Creek and 2 miles southwest of Murfreesboro, Pike County. Chain gage, read daily.

15. Red River at Garland City, Ark.

In SE. $\frac{1}{4}$ Sec. 17, T. 16 S., R. 25 W., at St. Louis-Southwestern Railway bridge at Garland City, Miller County. Sulphur River enters 35 miles downstream. Chain gage, read daily.

16. Buffalo River at Rush, Ark.

SE. $\frac{1}{4}$ Sec. 10, T. 17 N., R. 15 W. Rush Creek enters from left immediately downstream and $1\frac{1}{2}$ miles southeast of Rush, Marion County. Staff gage, read twice daily.

17. Black River at Black Rock, Ark.

In Sec. 21, T. 17 N., R. 1 W., at St. Louis & San Francisco Railroad bridge, at Black Rock, Lawrence County. Staff gage, read daily.

II. GAGING STATIONS NOT NOW BEING MAINTAINED BUT CONCERNING WHICH DISCHARGE DATA IS AVAILABLE OVER PERIODS OF THREE MONTHS OR MORE FROM THE U. S. GEOLOGICAL SURVEY CO-OPERATING WITH THE ARKANSAS GEOLOGICAL SURVEY OR PRIVATE AGENCIES

- 1. White River near Lead Hill, Ark.

At Bradley's Ferry, 5 miles northeast of Lead Hill, Marion County.

2. White River near Cotter, Ark.

At the Missouri Pacific Railway bridge at Cotter, Baxter County, $\frac{3}{4}$ of a mile below Falling Ash Creek.

3. Buffalo River near Gilbert, Ark.

At the Missouri & North Arkansas Railroad bridge near Gilbert, Searcy County. Bear Creek enters from the right $\frac{1}{4}$ mile upstream.

4. Little Red River near Pangburn, Ark.

At Skillern's Ferry, near Pangburn, White County. Big Red Creek enters about $1\frac{1}{2}$ miles downstream.

5. Ouachita River at Rockport Highway bridge, near Malvern, Ark.

In NW. $\frac{1}{4}$ Sec. 16, T. 4 S., R. 17 W., at Rockport Highway bridge, $1\frac{3}{4}$ miles northwest of Malvern, Hot Spring County.

6. Ouachita River at Arkadelphia, Ark.

At the St. Louis, Iron Mountain & Southern Railway bridge at Arkadelphia.

III. GAGING STATIONS ON STREAMS NEAR THE ARKANSAS-MISSOURI BOUNDARY LINE NOW MAINTAINED AND OPERATED BY THE U. S. GEOLOGICAL SURVEY IN COOPERATION WITH THE MISSOURI GEOLOGICAL SURVEY OR PRIVATE AGENCIES

1. Current River at Doniphan, Mo.

In N. $\frac{1}{2}$ Sec. 27, T. 23 N., R. 2 E., at highway bridge $\frac{3}{4}$ of a mile west of Doniphan, Ripley County, 2 miles above Briar Creek, and 12 miles below Buffalo Creek. Chain gage, read daily.

2. Eleven Point River near Bardley, Mo.

In NW. $\frac{1}{4}$ Sec. 20, T. 23 N., R. 2 W., at bridge on State Highway No. 42, 7 miles southwest of Bardley, Oregon County, Missouri, 7 miles above Fredericks Ford, and 12 miles above Missouri-Arkansas line. Chain gage, read daily.

3. North Fork of White River at Tecumseh, Mo.

In Sec. 16, T. 22 N., R. 12 W., at bridge on State Highway No. 80, at west edge of Tecumseh, Ozark County, $\frac{1}{2}$ mile below Bryant Creek, 3 miles above Lick Creek and 8 miles above Missouri-Arkansas line. Chain gage, read daily.

4. White River at Beaver, Ark.

In Sec. 20, T. 21 N., R. 26 W., at Missouri & North Arkansas Railroad bridge, $\frac{1}{4}$ mile east of depot at Beaver, Carroll County, 3 miles above Leatherwood Creek, and 6 miles below Cedar Creek. Chain gage, read daily.

IV. GAGING STATIONS IN MISSOURI ON STREAMS NEAR THE ARKANSAS-MISSOURI BOUNDARY LINE NOT NOW MAINTAINED BUT CONCERNING WHICH DISCHARGE DATA ARE AVAILABLE OVER A PERIOD OF A YEAR AND A HALF FROM THE U. S. GEOLOGICAL SURVEY COOPERATING WITH THE MISSOURI GEOLOGICAL SURVEY AND PRIVATE AGENCIES

1. White River near Branson, Mo.

At the Missouri Pacific Railway bridge, 600 feet above Turkey Creek and 1 mile south of Branson, Taney County.

V. GAGING STATIONS NOW MAINTAINED AND OPERATED BY THE U. S. GEOLOGICAL SURVEY FOR THE U. S. ENGINEER CORPS, VICKSBURG, MISS.*

1. Ouachita River near Camden, Ark.

Staff gage, read daily.

2. Saline River near Warren, Ark.

Chain gage, read daily.

*These stations were not completely installed until August, 1928, and should normally be included in the stream gaging report for 1929.

3. Little River near Wilton, Ark.
Chain gage, read daily.
4. Ouachita River at Arkadelphia, Ark.
Chain gage, read daily.

VI. GAGING STATIONS NOW MAINTAINED AND OPERATED BY THE U. S.
ENGINEER CORPS, MEMPHIS, TENN.†

1. Mulberry Creek near Mulberry, Ark.
Staff gage, read daily.
2. Petit Jean River at Danville, Ark.
Weather Bureau staff gage, read daily.
3. Fourche La Fave River near Nimrod, Ark.
Staff gage, read daily.

†These stations were not completely installed until January-February-March, 1929, and should normally be included in the stream gaging report for 1929.

DISCHARGE MEASUREMENTS AND GAGING STATION RECORDS

The following measurements and records have been made by the U. S. Geological Survey or by private agencies.

ST. FRANCIS RIVER BASIN

ST. FRANCIS RIVER FLOODWAY NEAR MARKED TREE, ARK.

LOCATION.—In SE. $\frac{1}{4}$ sec. 10, T. 11 N., R. 6 E., at lock and dam of Poinsett County Drainage District No. 7, and 3 miles north of Marked Tree, Poinsett County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 1, 1927, to September 30, 1928.

EQUIPMENT.—Gage is chiseled in vertical concrete headwall of lock. Discharge measurements made from trestle highway bridge 4 miles below gage.

CHANNEL AND CONTROL.—The floodway consists of two parallel dredged ditches half a mile apart with flat, heavily wooded land between. Levees outside the ditches confine the water at high stages to the floodway. Water from St. Francis Lake, formed by a dam across the natural channel, is carried 10 miles by this floodway and discharged again into the natural channel. Bed of ditches sandy; probably shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 31.2 feet July 5-9, 1928 (discharge, 21,400 second-feet); minimum discharge, 450 second-feet October 1, 1927 (gage height, 15.5 feet).

The maximum stage of July 5-9, 1928, when there were no breaks in the levees, was 0.6 foot higher than the stage in April, 1927, when there were numerous levee breaks.

DIVERSIONS AND REGULATIONS.—Some water from the lake is passed through sluice gates in the dam down the natural channel of the river. See list of "Miscellaneous Discharge Measurements" for flow in this channel when discharge measurements were made.

ACCURACY.—Stage-discharge relation changed during period of records. Rating curves well defined above 4,000 second-feet; fairly well defined below. Gage read to tenths once daily. Records fair.

COOPERATION.—Gage-height record furnished by Poinsett County Drainage District No. 7, Herman Madole, foreman.

NOTE.—For miscellaneous gaging station and discharge data of the St. Francis River basin, see pages 105, 126-127.

DAILY DISCHARGE, IN SECOND-FEET, OF THE ST. FRANCIS RIVER FLOODWAY
NEAR MARKED TREE, ARK., FOR THE YEARS ENDING
SEPTEMBER 30, 1927 AND 1928

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1927												
1.....												2,640
2.....												3,060
3.....												2,120
4.....												1,880
5.....												1,650
6.....												1,430
7.....												1,280
8.....												1,130
9.....												1,080
10.....												1,040
11.....												995
12.....												910
13.....												870
14.....												830
15.....												685
16.....												620
17.....												560
18.....												500
19.....												450
20.....												425
21.....												405
22.....												425
23.....												425
24.....												425
25.....												405
26.....												405
27.....												385
28.....												385
29.....												385
30.....												425
31.....												.....
1927-28												
1.....	450	1,380	4,800	7,360	5,250	4,110	4,320	10,500	3,760	20,200	6,140	1,400
2.....	530	1,700	4,800	7,360	5,250	4,110	4,250	10,700	3,550	20,600	5,700	1,400
3.....	685	1,880	4,640	7,180	5,160	4,180	4,180	10,700	3,410	20,900	5,250	1,400
4.....	910	1,940	4,480	7,000	5,160	4,250	4,110	11,000	3,480	21,200	4,800	1,590
5.....	1,180	1,940	4,250	6,840	5,070	4,320	3,970	11,000	3,480	21,400	4,400	1,840
6.....	1,380	1,940	4,110	6,540	4,980	4,400	4,110	11,000	3,410	21,400	4,040	2,120
7.....	1,480	1,940	3,830	6,540	4,890	4,480	4,320	11,000	3,480	21,400	3,690	2,230
8.....	1,820	2,060	3,690	6,400	4,890	4,480	4,400	10,700	3,760	21,400	3,280	2,120
9.....	1,940	2,060	3,410	6,260	4,800	4,480	4,480	10,500	4,180	21,400	2,820	1,900
10.....	2,060	2,060	3,060	6,020	4,640	4,480	4,890	10,200	4,560	20,900	2,400	1,740
11.....	2,180	2,000	2,920	5,800	4,640	4,400	5,250	10,000	4,980	20,600	2,060	1,590
12.....	2,580	2,060	2,710	5,610	4,560	4,400	5,520	9,560	5,250	20,400	1,790	1,440
13.....	2,990	2,060	2,580	5,430	4,480	4,400	5,700	9,120	5,700	19,900	1,540	1,360
14.....	3,270	2,060	2,120	5,160	4,480	4,400	5,900	8,500	6,540	19,600	1,400	1,220
15.....	3,270	2,060	2,380	4,980	4,480	4,400	6,020	7,900	7,540	18,900	1,310	1,100
16.....	3,270	2,250	2,320	4,720	4,480	4,400	6,140	7,360	8,700	18,400	1,220	1,000
17.....	3,270	2,320	2,320	4,560	4,480	4,320	6,400	6,840	10,000	17,900	1,140	930
18.....	3,410	2,380	2,380	4,400	4,480	4,250	6,540	6,400	11,200	17,400	1,140	840
19.....	3,270	2,510	2,510	4,400	4,320	4,180	6,840	5,900	12,200	16,700	1,140	785
20.....	3,130	2,710	2,780	4,400	4,250	4,180	7,180	5,610	13,100	16,000	1,140	735
21.....	2,920	3,340	2,920	4,400	4,180	4,250	7,720	5,250	14,100	15,300	1,100	685
22.....	2,710	3,620	3,270	4,480	4,110	4,250	7,900	5,160	14,600	14,300	1,140	660
23.....	2,440	3,830	3,550	4,720	4,040	4,250	8,300	4,980	15,800	13,600	1,140	660
24.....	2,180	4,180	3,970	4,890	3,970	4,250	8,700	4,720	16,500	12,600	1,140	620
25.....	2,000	4,320	4,560	4,980	3,900	4,320	9,120	4,560	17,400	11,900	1,140	580
26.....	1,820	4,480	5,250	5,070	3,830	4,320	9,780	4,480	18,200	11,000	1,180	560
27.....	1,940	4,640	5,700	5,160	3,830	4,400	10,000	4,400	18,600	10,000	1,180	560
28.....	1,280	4,720	6,400	5,160	3,900	4,400	10,200	4,320	19,200	9,120	1,220	502
29.....	1,130	4,800	6,840	5,160	4,040	4,400	10,500	4,180	19,600	8,300	1,260	530
30.....	950	4,890	7,000	5,250	.....	4,400	10,500	4,040	19,900	7,540	1,260	515
31.....	870	.....	7,180	5,250	.....	4,400	.....	3,830	.....	6,840	1,310	.....

MONTHLY DISCHARGE OF ST. FRANCIS RIVER FLOODWAY NEAR MARKED TREE, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1927 AND 1928

Month.	Discharge in second-feet.		
	Maximum.	Minimum.	Mean
1927			
September.....	3,060	385	941
1927-28			
October.....	3,140	450	2,040
November.....	4,890	1,380	2,800
December.....	7,180	2,120	3,960
January.....	7,360	4,400	5,530
February.....	5,250	3,830	4,500
March.....	4,480	4,110	4,330
April.....	10,500	3,970	6,570
May.....	11,000	3,830	7,560
June.....	19,900	3,410	9,870
July.....	21,400	6,840	16,700
August.....	6,140	1,100	2,240
September.....	2,230	502	1,150
The year.....	21,400	450	5,620

BIG LAKE, OUTLET NEAR MANILA, ARK.

LOCATION.—In SE. $\frac{1}{4}$ sec. 9, T. 14 N., R. 9 E., at highway bridge at Big Lake, a station on the St. Louis-San Francisco Railway, and $3\frac{1}{2}$ miles southeast of Manila, Mississippi County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 22, 1927, to September 30, 1928.

EQUIPMENT.—Chain gage on bridge. Discharge measurements made from bridge at gage except at low stages, when they are made from bridges 6 miles downstream.

CHANNEL AND CONTROL.—Bed composed of sand and silt; fairly permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 19.7 feet July 5, 1928 (discharge, 15,700 second-feet); minimum stage, 4.45 feet September 30, 1928 (discharge, 593 second-feet). Flood of April, 1927, reached stage of 20.3 feet.

ACCURACY.—Stage-discharge relation permanent. Rating curves well defined above 1,000 second-feet; fairly well defined below. Gage read to hundredths once daily. Records good.

COOPERATION.—Gage-height record furnished by Mississippi County Drainage District No. 17, O. M. Fairley, Osceola, Ark., Engineer.

DAILY DISCHARGE, IN SECOND-FEET, OF BIG LAKE OUTLET NEAR MANILA, ARK.,
FOR THE YEARS ENDING SEPTEMBER 30, 1927 AND 1928

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1927												
1.												
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												
13.												
14.												
15.												
16.												
17.												
18.												
19.												
20.												
21.												
22.												763
23.												763
24.												720
25.												720
26.												677
27.												677
28.												763
29.												806
30.												938
31.												
1927-28												
1.	1,160	1,210	2,350	3,890		3,140	2,150	7,490	1,870	14,800	2,060	1,390
2.	1,390	1,250	2,150	3,890		3,140	2,060	7,230	1,870	15,200	1,870	1,490
3.	1,820	1,250	2,060	3,820		3,040	1,960	7,100	1,770	15,500	1,770	1,540
4.	2,150	1,210	2,110	3,820		2,980	1,910	6,860	1,910	15,700	1,720	1,580
5.	2,390	1,160	2,060	3,760		2,940	1,870	6,740	2,010	15,700	1,680	1,540
6.	2,490	1,120	1,960	3,520		2,840	2,200	6,500	2,490	15,500	1,630	1,440
7.	2,540	1,120	1,870	3,300		2,690	2,350	6,170	3,240	15,400	1,580	1,350
8.	2,440	1,160	1,770	3,240		2,590	2,840	5,850	3,760	14,800	1,580	1,250
9.	2,440	1,210	1,720	3,140		2,540	3,580	5,450	4,380	14,200	1,490	1,210
10.	2,540	1,250	1,630	3,040		2,540	4,100	5,060	4,880	13,600	1,390	1,120
11.	2,590	1,350	1,630	2,940		2,590	4,460	4,620	5,450	12,900	1,350	1,070
12.	2,740	1,440	1,580	2,840		2,640	4,700	4,310	6,060	12,000	1,300	1,030
13.	2,740	1,540	1,770	2,690		2,690	4,700	4,030	6,740	11,100	1,250	982
14.	2,640	1,680	2,150	2,590		2,690	4,700	3,700	7,230	10,400	1,210	938
15.	2,640	1,770	2,440	2,540		2,690	4,620	3,400	7,890	9,480	1,120	938
16.	2,640	1,960	2,690	2,490		2,690	4,540	3,190	8,730	8,880	1,070	894
17.	2,540	2,150	2,940	2,490		2,640	4,540	2,980	9,180	8,030	1,030	894
18.	2,440	2,390	3,140	2,640		2,690	4,540	2,780	9,480	7,460	1,030	763
19.	2,250	2,840	3,240	2,740		2,880	4,540	2,590	9,780	6,890	1,070	720
20.	2,150	3,140	3,350	3,040		3,040	4,540	2,490	9,780	6,330	1,070	720
21.	2,010	3,240	3,350	3,240		3,190	4,790	2,350	9,940	5,760	1,070	720
22.	1,910	3,350	3,640	3,580		3,190	4,880	2,300	10,100	5,190	1,070	677
23.	1,770	3,350	3,890	3,820		3,140	5,550	2,300	10,400	4,620	1,120	720
24.	1,680	3,350	4,030	3,890		3,090	6,390	2,350	11,100	4,240	1,300	677
25.	1,580	3,190	3,960	3,890		3,040	7,230	2,350	11,800	3,820	1,350	677
26.	1,490	3,040	3,890	3,820		2,940	7,750	2,350	12,600	3,640	1,390	635
27.	1,440	2,980	3,890	3,580		2,840	8,030	2,250	12,900	3,300	1,440	635
28.	1,390	2,840	3,820	3,240		2,640	8,030	2,250	13,400	3,090	1,390	635
29.	1,350	2,740	3,760	3,240		2,490	7,750	2,150	13,800	2,740	1,350	635
30.	1,300	2,540	3,760	3,190		2,440	7,750	2,060	14,000	2,540	1,300	593
31.	1,210		3,820	3,140		2,300		1,960		2,250	1,350	

NOTE.—No gage-height record February 1 to March 1 and July 18-22; discharge estimated March 1 and interpolated July 18-22.

MONTHLY DISCHARGE OF BIG LAKE OUTLET NEAR MANILA, ARK., FOR THE YEAR
ENDING SEPTEMBER 30, 1928

Month.	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.
October.....	2,740	1,160	2,060
November.....	3,350	1,120	2,090
December.....	4,030	1,580	2,790
January.....	3,890	2,490	3,260
March.....	3,190	2,300	2,810
April.....	8,030	1,870	4,640
May.....	7,490	1,960	3,970
June.....	14,000	1,770	7,620
July.....	15,700	2,250	9,200
August.....	2,060	1,030	1,370
September.....	1,580	593	982

WHITE RIVER BASIN

WHITE RIVER AT BEAVER, ARK.

LOCATION.—In sec. 20, T. 21 N., R. 26 W., at Missouri & North Arkansas Railroad bridge, one-fourth mile east of depot at Beaver, Carroll County, 3 miles above Leatherwood Creek, and 6 miles below Cedar Creek.

DRAINAGE AREA.—1,270 square miles (measured on topographic maps and base map of Arkansas).

RECORDS AVAILABLE.—July 17, 1909, to December 31, 1910, and May 16, 1923, to September 30, 1928.

EQUIPMENT.—Chain gage on upstream side of bridge. During 1909-1910 a chain gage on upstream side of bridge with datum 1.50 feet lower than present datum. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of clean sand and gravel. Right bank high and rocky. Left bank thinly wooded and subject to overflow at extremely high stages. Control is a clean gravel bar half a mile below gage; practically permanent.

EXTREMES OF DISCHARGE.—1923-1928: Maximum stage recorded, 37.0 feet April 16, 1927 (discharge, 65,000 second-feet); minimum stage, 2.15 feet August 25 and September 1, 1923; minimum discharge, 33 second-feet September 10, 1925.

1909-1910: Maximum stage recorded, 17.35 feet May 17, 1910 (discharge, 21,500 second-feet); minimum stage, 1.55 feet October 1-8, 1909 (discharge, 42 second-feet). These gage heights refer to datum of gage used 1923-1928.

ACCURACY.—1923-1928: Stage-discharge relation practically permanent; not affected by ice. Rating curves either well or fairly well defined. Gage read to hundredths twice daily. Records good.

1909-1910: Rating curve fairly well defined above 300 second-feet. Records fair for medium and high stages and poor for low stages.

COOPERATION.—Data collected by United States Geological Survey co-operating with the Missouri Bureau of Geology and Mines and the Ozark Power & Water Company.

NOTE.—For miscellaneous gaging station and discharge data for the White River basin, see pages 105-106.

DAILY DISCHARGE, IN SECOND-FEET, OF WHITE RIVER AT BEAVER, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1909-1910, AND 1923-1928

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1909				1909			
1.....		110	52	16.....		62	48
2.....		91	52	17.....	350	62	45
3.....		91	52	18.....		275	62
4.....		91	52	19.....	225	62	45
5.....		91	52	20.....	210	62	45
6.....		91	52	21.....	180	57	45
7.....		91	57	22.....	180	52	48
8.....		76	57	23.....	155	52	45
9.....		76	57	24.....	155	52	45
10.....		76	52	25.....	132	52	45
11.....		76	52	26.....	132	52	45
12.....		76	52	27.....	132	52	45
13.....		69	52	28.....	132	52	45
14.....		69	52	29.....	110	57	45
15.....		62	52	30.....	110	57	45
				31.....	110	52	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909-10												
1.....	42	57	132	155	210	3,510	1,520	462	1,440	900	225	132
2.....	42	57	132	132	225	2,040	970	418	1,280	710	210	155
3.....	42	57	132	155	180	1,600	802	372	970	590	210	155
4.....	42	57	132	155	180	1,280	620	330	835	1,120	195	168
5.....	42	100	1,680	155	210	970	740	310	740	835	180	155
6.....	42	350	4,630	155	155	835	1,280	292	620	710	180	258
7.....	42	168	2,570	330	155	770	1,950	292	590	510	535	310
8.....	42	292	1,440	395	180	620	1,600	292	770	510	1,770	225
9.....	57	275	970	350	155	590	1,280	292	740	590	1,680	258
10.....	57	210	770	240	155	620	1,860	310	1,120	650	970	258
11.....	52	155	650	225	180	535	1,600	310	1,040	970	970	210
12.....	48	132	535	210	132	485	1,860	275	1,440	8,920	740	210
13.....	48	121	485	310	155	462	5,230	258	1,280	10,500	770	180
14.....	57	121	485	372	132	440	2,790	225	970	5,980	562	155
15.....	48	110	462	330	132	418	2,790	225	802	2,790	485	144
16.....	48	168	440	330	155	372	2,900	1,770	680	1,950	418	132
17.....	48	240	395	330	155	350	3,010	21,500	562	1,440	462	121
18.....	48	292	372	330	180	310	2,570	9,880	462	1,120	395	110
19.....	52	485	330	372	195	310	1,950	4,630	418	970	372	110
20.....	57	395	310	330	168	275	1,680	3,010	418	802	292	110
21.....	62	330	310	330	292	275	1,440	2,350	485	680	275	110
22.....	84	258	275	330	395	258	1,280	2,040	440	562	275	110
23.....	84	240	275	330	485	240	970	3,010	395	510	275	100
24.....	76	210	240	330	590	240	835	3,770	462	462	258	91
25.....	69	180	210	275	710	210	835	3,640	418	395	225	91
26.....	62	168	225	310	802	210	710	3,120	680	350	210	91
27.....	57	155	225	258	1,600	210	620	2,240	680	330	180	91
28.....	57	132	210	275	3,120	210	562	1,770	1,360	292	168	310
29.....	57	132	210	210	.....	195	535	1,440	1,950	258	155	275
30.....	57	132	292	240	.....	258	462	1,120	1,120	275	155	195
31.....	62	.....	180	210	.....	835	.....	970	.....	258	144	.....

WHITE RIVER BASIN

23

DAILY DISCHARGE, IN SECOND-FEET, OF WHITE RIVER AT BEAVER, ARK., FOR
THE YEARS ENDING SEPTEMBER 30, 1909-1910, AND 1923-1928—Continued

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
				1910			
1910				16.....	258	91	91
1.....	155	110	91	17.....	225	91	91
2.....	132	110	91	18.....	195	91	91
3.....	144	110	91	19.....	180	91	91
4.....	155	110	110	20.....	180	91	91
5.....	258	110	100	21.....	180	91	91
6.....	350	110	91	22.....	155	91	76
7.....	292	110	91	23.....	155	91	76
8.....	258	110	91	24.....	155	91	76
9.....	210	110	91	25.....	155	91	76
10.....	180	110	91	26.....	144	91	76
11.....	155	110	91	27.....	132	110	76
12.....	155	91	91	28.....	132	110	91
13.....	225	91	91	29.....	132	110	91
14.....	350	91	91	30.....	132	91	91
15.....	395	91	91	31.....	132	.....	91

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
						1923					
1923						16.....	1,500	1,210	530	53	224
1.....		3,640	650	116	46	17.....	13,700	1,210	251	50	195
2.....		2,240	502	110	56	18.....	6,730	1,210	270	50	246
3.....		1,740	420	147	52	19.....	4,480	1,380	305	49	238
4.....		1,470	365	134	50	20.....	3,640	980	215	48	338
5.....		1,210	310	108	48	21.....	3,010	805	199	47	840
6.....		1,130	280	98	47	22.....	2,350	650	158	45	420
7.....		3,120	242	83	59	23.....	4,030	560	134	49	420
8.....		2,900	228	79	65	24.....	5,080	530	128	52	338
9.....		2,040	211	75	88	25.....	12,600	475	125	56	275
10.....		1,470	187	71	275	26.....	9,720	448	113	59	238
11.....		1,210	172	67	175	27.....	8,920	448	108	62	203
12.....		1,050	161	64	134	28.....	5,680	740	108	58	175
13.....		980	150	62	168	29.....	3,900	740	98	50	158
14.....		980	140	59	233	30.....	3,010	770	448	50	144
15.....		1,740	980	56	134	31.....	2,790	.....	161	48	.....

DAILY DISCHARGE, IN SECOND-FEET, OF WHITE RIVER AT BEAVER, ARK., FOR
THE YEARS ENDING SEPTEMBER 30, 1909-1910, AND 1923-1928—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1923-24												
1.....	128	335	3,250	1,100	1,020	570	1,640	21,500	2,680	315	2,350	126
2.....	123	540	2,900	970	930	540	1,440	9,240	2,040	295	5,530	163
3.....	110	2,900	2,140	810	850	510	1,240	5,530	1,640	278	2,240	158
4.....	139	4,630	1,940	700	772	570	1,100	3,900	1,540	260	1,240	225
5.....	155	4,330	1,740	665	735	632	1,020	3,010	1,340	242	850	225
6.....	136	2,140	1,540	600	700	665	970	2,460	970	225	665	210
7.....	128	1,440	1,240	510	665	540	890	2,040	850	225	570	178
8.....	139	1,100	1,100	455	600	510	772	1,840	810	210	2,460	155
9.....	147	850	1,060	430	540	480	735	1,440	735	195	1,060	136
10.....	134	665	2,040	430	510	455	665	1,240	632	192	700	128
11.....	117	570	2,680	405	600	430	1,240	1,100	970	183	540	123
12.....	108	510	2,460	405	850	405	1,020	970	3,510	335	430	112
13.....	108	480	5,380	405	2,040	430	890	850	3,900	632	405	108
14.....	166	700	11,200	380	1,840	405	772	772	2,140	510	358	99
15.....	295	1,740	6,730	380	1,540	480	700	665	1,540	380	315	97
16.....	278	1,540	3,900	358	1,340	570	632	600	1,150	315	380	94
17.....	260	1,100	2,900	335	1,340	810	600	570	1,540	278	295	90
18.....	295	810	2,350	405	1,640	890	540	540	2,240	1,060	260	90
19.....	358	665	1,940	540	1,740	970	570	480	1,240	2,240	242	405
20.....	295	570	1,940	540	1,640	1,060	510	480	850	1,940	242	665
21.....	242	510	2,570	600	1,440	1,020	480	540	1,540	970	225	632
22.....	210	455	3,770	510	1,240	1,640	430	480	2,040	665	210	772
23.....	180	430	8,120	455	1,100	2,570	405	455	1,540	510	186	600
24.....	161	405	7,330	540	1,020	3,770	405	430	1,100	405	172	430
25.....	155	570	4,480	700	930	3,640	405	540	810	358	161	335
26.....	144	510	3,250	2,240	850	2,900	1,940	510	700	315	150	295
27.....	139	540	2,570	1,940	772	2,460	13,400	540	540	278	142	260
28.....	144	735	2,140	1,540	700	2,040	6,130	480	480	260	131	260
29.....	152	772	1,840	1,340	632	2,140	4,480	3,120	405	242	126	242
30.....	315	1,740	1,540	1,240	.....	2,140	12,600	11,500	358	225	120	225
31.....	358	.....	1,340	1,150	.....	1,940	.....	4,930	.....	810	115	.....

WHITE RIVER BASIN

25

DAILY DISCHARGE, IN SECOND-FEET, OF WHITE RIVER AT BEAVER, ARK., FOR
THE YEARS ENDING SEPTEMBER 30, 1909-1910, AND 1923-1928—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1924-25												
1.....	251	98	154	700	602	1,150	278	3,640	237	92	103	52
2.....	229	95	148	635	602	1,030	274	2,680	224	86	92	48
3.....	214	92	148	635	668	910	274	2,130	210	80	92	40
4.....	193	92	160	602	668	835	269	1,730	194	74	86	43
5.....	455	90	229	570	668	765	269	1,430	178	106	117	45
6.....	455	90	244	510	602	700	259	1,150	166	151	114	43
7.....	336	92	336	510	602	668	371	990	155	124	110	38
8.....	336	87	430	480	602	635	423	872	147	269	174	36
9.....	382	85	1,240	450	800	570	510	800	136	244	151	35
10.....	314	85	835	450	835	540	2,680	800	128	190	1,730	33
11.....	274	82	635	423	990	510	3,900	1,150	124	162	950	38
12.....	244	82	510	396	950	480	2,460	1,330	174	166	510	38
13.....	214	87	430	396	872	488	1,830	1,070	371	168	396	38
14.....	200	92	405	371	800	450	1,430	2,240	255	282	312	92
15.....	186	222	358	371	765	423	1,240	3,250	241	269	259	174
16.....	173	259	336	570	732	423	1,070	2,240	215	206	119	283
17.....	160	732	314	668	668	423	910	1,330	182	170	198	297
18.....	157	570	1,830	1,330	635	423	800	1,070	151	151	174	250
19.....	151	430	9,560	1,530	602	423	732	872	206	139	151	250
20.....	145	336	22,500	1,240	570	396	668	765	396	132	136	241
21.....	136	314	7,480	1,150	540	396	602	688	510	510	190	210
22.....	125	266	3,900	990	602	371	570	570	396	190	155	174
23.....	119	236	2,680	910	700	346	510	510	288	151	147	158
24.....	114	218	2,130	800	3,640	346	450	423	224	143	143	162
25.....	108	200	1,630	765	2,680	336	3,510	423	190	136	132	170
26.....	105	186	1,330	700	2,030	336	1,930	371	158	158	121	224
27.....	105	180	1,070	700	1,630	326	4,480	346	139	158	106	217
28.....	105	173	950	635	1,430	307	8,440	326	128	151	86	635
29.....	105	166	835	635	.....	297	3,200	302	114	131	74	635
30.....	103	160	732	540	.....	288	5,680	283	99	122	62	570
31.....	100	.....	700	570	.....	283	.....	255	.....	110	57	.....
1925-26												
1.....	800	534	474	366	3,710	1,270	2,970	1,030	203	155	118	393
2.....	765	504	474	340	3,450	1,110	4,100	950	286	143	101	214
3.....	765	474	449	366	2,750	950	3,320	1,030	950	131	93	255
4.....	732	449	449	393	2,310	872	2,750	911	764	121	85	216
5.....	570	420	449	474	2,000	800	2,200	911	658	112	78	728
6.....	480	393	1,030	594	1,710	764	1,900	800	564	104	71	1,440
7.....	423	2,860	1,190	564	1,530	728	1,710	728	504	96	64	1,620
8.....	540	4,500	1,030	534	1,350	693	2,100	693	420	107	58	1,110
9.....	5,380	8,120	872	474	1,190	693	2,310	693	340	159	55	836
10.....	8,920	3,970	800	449	1,110	728	2,000	1,270	300	203	51	872
11.....	3,320	2,750	728	420	950	1,190	2,420	1,110	264	255	48	1,030
12.....	2,100	2,100	658	393	836	3,320	3,710	1,030	242	246	48	764
13.....	1,620	1,710	626	393	836	3,450	3,710	872	211	211	44	594
14.....	2,000	1,440	594	340	764	2,530	3,200	764	340	186	46	504
15.....	2,200	1,270	564	340	693	2,000	2,640	658	291	166	51	420
16.....	3,320	1,110	1,350	314	658	1,710	2,200	594	246	147	64	366
17.....	5,230	1,190	1,440	420	626	1,440	1,900	534	264	131	166	305
18.....	7,480	1,030	1,190	658	594	1,350	1,710	504	393	118	242	268
19.....	3,840	872	1,110	2,420	564	1,190	1,440	449	420	107	340	237
20.....	2,530	800	950	564	1,110	1,270	420	420	96	1,900	211	
21.....	1,900	764	872	2,200	626	1,190	1,110	393	564	88	1,270	190
22.....	1,530	658	800	2,100	626	1,190	1,110	366	564	83	1,030	174
23.....	1,270	626	728	3,200	594	1,190	1,270	314	420	78	1,800	166
24.....	1,190	594	658	2,640	594	1,350	1,530	296	366	78	1,350	155
25.....	1,530	534	564	2,530	764	1,270	2,100	273	309	233	764	1,270
26.....	1,440	534	534	2,310	950	1,110	2,100	233	268	182	83	728
27.....	2,530	504	474	2,200	1,620	1,030	1,710	211	237	131	420	1,900
28.....	872	504	474	2,420	1,440	950	1,440	195	211	140	340	1,440
29.....	764	474	504	3,200	.....	872	1,270	178	190	174	266	4,780
30.....	658	504	420	3,200	.....	872	1,190	170	174	166	255	13,900
31.....	504	.....	393	3,320	.....	1,190	.....	220	.....	137	242	.....

DAILY DISCHARGE, IN SECOND-FEET, OF WHITE RIVER AT BEAVER, ARK., FOR
THE YEARS ENDING SEPTEMBER 30, 1909-1910, AND 1923-1928—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1926-27												
1.....	18,200	7,080	1,040	1,360	2,870	770	4,360	2,250	8,520	635	14,600	668
2.....	5,480	4,360	920	1,270	3,560	735	5,340	2,050	4,920	575	3,680	575
3.....	2,980	3,090	840	1,140	4,500	770	4,080	1,850	15,100	548	3,940	520
4.....	5,760	2,450	770	1,000	3,440	805	3,200	1,650	21,200	495	2,650	470
5.....	14,400	2,050	735	920	2,870	840	2,650	2,250	10,800	470	2,050	445
6.....	12,200	1,650	668	840	2,550	1,180	2,250	2,250	7,240	445	3,680	398
7.....	4,640	1,450	1,650	770	2,250	1,750	2,250	1,950	15,800	420	2,980	375
8.....	2,980	1,360	2,150	700	2,050	2,150	5,060	2,050	4,780	398	1,950	352
9.....	2,250	1,360	3,680	635	1,850	2,250	10,600	3,090	3,200	375	1,450	330
10.....	2,650	1,360	4,920	575	1,750	2,050	7,080	9,000	2,550	375	2,150	310
11.....	11,100	1,270	4,920	525	1,550	1,850	5,480	12,400	2,050	352	4,780	290
12.....	8,520	1,140	3,680	520	1,550	2,150	9,480	5,340	1,650	330	6,760	270
13.....	4,500	1,000	2,980	885	1,550	4,080	13,700	3,680	1,450	352	3,090	270
14.....	3,090	1,270	2,450	1,270	1,550	3,090	29,600	2,870	1,180	420	2,050	250
15.....	2,350	3,940	2,050	2,255	1,550	2,450	55,600	2,450	1,040	420	1,550	246
16.....	1,950	9,640	1,550	1,750	1,450	2,150	57,800	2,050	960	548	1,180	239
17.....	1,550	5,060	1,360	1,455	1,360	2,350	23,200	1,750	920	735	2,050	227
18.....	1,360	3,680	1,180	1,450	1,270	5,200	12,000	1,550	1,040	735	11,500	216
19.....	1,090	3,320	1,040	1,455	1,180	8,840	26,800	1,750	1,360	605	6,320	209
20.....	920	2,760	1,090	2,150	1,140	8,680	34,400	2,450	2,050	520	2,980	203
21.....	840	2,550	2,650	2,985	1,040	9,320	16,900	3,800	3,800	470	2,050	194
22.....	700	2,450	8,520	3,560	1,000	6,460	11,900	2,450	4,220	770	1,550	188
23.....	635	2,250	7,080	9,965	960	4,500	8,360	2,150	2,980	495	1,360	182
24.....	575	2,050	4,500	24,600	920	3,440	6,320	3,320	2,050	420	1,360	188
25.....	605	1,850	3,440	28,805	880	2,870	5,200	3,940	1,650	398	1,180	188
26.....	575	1,750	2,760	18,200	805	2,450	4,360	4,360	1,270	375	1,000	185
27.....	548	1,550	2,350	9,165	770	2,150	3,680	3,090	1,040	352	770	212
28.....	495	1,360	2,050	5,180	735	1,850	3,090	2,350	880	330	700	227
29.....	2,250	1,270	1,950	4,785	.....	2,250	2,760	1,850	770	330	700	310
30.....	8,680	1,090	1,850	3,940	.....	4,080	2,550	1,550	700	445	668	1,450
31.....	16,500	.....	1,550	3,325	.....	4,640	.....	1,360	.....	7,080	805	.....
1927-28												
1.....	16,900	324	768	1,830	960	960	695	3,320	4,360	2,980	805	420
2.....	34,500	880	730	1,500	880	920	660	2,870	2,150	2,250	805	395
3.....	24,700	1,720	695	1,300	805	842	628	2,550	2,050	1,950	595	347
4.....	38,100	1,940	628	1,160	768	880	628	2,350	2,050	1,550	920	324
5.....	9,640	1,610	565	1,080	805	880	9,160	2,450	2,250	1,360	2,640	324
6.....	4,980	1,210	535	1,040	960	1,040	16,000	2,870	2,450	1,180	1,400	302
7.....	3,600	1,400	535	1,000	1,400	1,000	29,700	2,350	1,850	1,000	842	281
8.....	3,360	3,000	505	960	4,280	1,610	9,960	2,050	1,550	920	660	273
9.....	3,240	5,820	960	920	3,600	4,840	5,960	1,950	1,950	840	565	239
10.....	2,400	3,600	960	880	2,640	6,440	4,420	1,750	1,650	770	505	232
11.....	1,940	2,640	842	842	2,160	4,280	3,480	1,650	1,750	770	448	232
12.....	1,610	2,160	805	805	1,830	3,360	2,880	1,450	2,550	1,840	395	225
13.....	1,610	1,940	2,805	805	1,610	2,760	2,520	1,360	5,060	1,180	395	218
14.....	1,500	1,610	16,200	768	1,830	2,400	2,160	1,270	28,300	840	370	208
15.....	1,210	2,280	46,100	730	2,160	2,280	2,400	1,180	25,700	770	347	196
16.....	1,080	2,520	11,300	695	2,400	3,600	2,050	1,450	8,040	700	324	187
17.....	960	3,480	6,120	880	2,050	4,700	1,720	3,800	6,760	605	324	184
18.....	880	2,640	4,560	1,610	1,940	3,600	1,500	4,500	13,300	575	347	175
19.....	768	2,280	3,480	4,840	1,830	2,880	1,300	5,480	8,040	548	347	170
20.....	695	2,160	2,760	12,000	1,610	2,400	1,300	7,080	5,060	520	370	161
21.....	660	2,280	2,280	7,240	1,610	2,050	19,600	6,460	4,920	520	370	156
22.....	595	2,050	2,050	4,560	1,610	1,830	36,800	5,080	18,000	495	370	158
23.....	535	1,720	1,830	3,480	1,500	1,610	32,000	5,620	13,700	470	505	153
24.....	505	1,500	1,610	2,880	1,500	1,400	13,500	4,080	16,200	495	842	132
25.....	475	1,300	1,400	2,400	1,500	1,300	8,040	2,980	12,000	548	5,400	132
26.....	420	1,160	1,300	2,050	1,300	1,160	6,040	2,350	7,080	495	3,000	130
27.....	395	1,080	1,210	1,720	1,210	1,040	5,620	1,950	4,920	520	1,400	125
28.....	370	960	1,610	1,500	1,080	960	5,760	1,650	3,800	700	960	125
29.....	347	880	1,610	1,300	1,040	880	4,640	1,450	3,200	520	730	125
30.....	324	880	2,280	1,120	805	3,800	1,270	4,080	445	595	121
31.....	324	2,280	1,040	730	1,450	470	505

WHITE RIVER BASIN

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MONTHLY DISCHARGE OF WHITE RIVER AT BEAVER, ARK., FOR THE YEARS
ENDING SEPTEMBER 30, 1909-1910, AND 1923-1928
(Drainage area, 1,270 square miles.)

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean	Per square mile.	
1909					
July 17-31.....	350	110	173	0 136	0.08
August.....	110	52	68.3	.054	.06
September.....	57	45	49.2	.039	.04
1909-10					
October.....	84	42	54.3	.043	.05
November.....	485	57	193	.152	.17
December.....	4,630	132	636	.501	.58
January.....	395	132	273	.215	.25
February.....	3,120	132	407	.320	.33
March.....	3,510	195	643	.506	.58
April.....	5,230	462	1,580	1.24	1.38
May.....	21,500	225	2 290	1.80	2.08
June.....	1,950	395	839	.661	.74
July.....	10,500	258	1,510	1.19	1.37
August.....	1,770	144	450	.354	.41
September.....	310	91	167	.131	.15
The year.....	21,500	42	757	.596	8.09
1910					
October.....	395	132	195	.154	.18
November.....	110	91	99.9	.079	.09
December.....	110	76	89.0	.070	.08
1923					
May 16-31.....	21,500	2,350	6,950	5.47	3.25
June.....	3,640	448	1,300	1.02	1.14
July.....	980	98	269	.212	.24
August.....	147	45	69.5	.055	.06
September.....	840	46	203	.160	.18
1923-24					
October.....	358	108	188	0.148	0.17
November.....	4,630	335	1,140	.898	1.00
December.....	11,200	1,060	3,210	2.53	2.92
January.....	2,240	335	744	.586	.68
February.....	2,040	510	1,050	.827	.89
March.....	3,770	405	1,230	.969	1.12
April.....	13,400	405	1,950	1.54	1.72
May.....	21,500	430	2,670	2.10	2.42
June.....	3,900	358	1,390	1.09	1.22
July.....	2,240	183	495	.390	.45
August.....	5,530	115	738	.581	.67
September.....	772	90	255	.201	.22
The year.....	21,500	90	1,260	.992	13.48
1924-25					
October.....	455	100	203	0.160	0.18
November.....	732	82	197	.155	.17
December.....	22,500	148	2,070	1.63	1.88
January.....	1,530	371	685	.539	.62
February.....	3,640	540	982	.772	.80
March.....	1,150	283	512	.403	.46
April.....	13,200	259	2,000	1.57	1.75
May.....	3,640	255	1,170	.921	1.06
June.....	510	99	211	.166	.19
July.....	510	74	168	.132	.15
August.....	1,730	57	237	.187	.22
September.....	635	33	176	.139	.16
The year.....	22,500	33	716	.564	7.64

MONTHLY DISCHARGE OF WHITE RIVER AT BEAVER, ARK., FOR THE YEARS
ENDING SEPTEMBER 30, 1909-1910, AND 1923-1928—*Continued*

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1925-26					
October.....	8,920	423	2,170	1.71	1.97
November.....	8,120	393	1,410	1.11	1.24
December.....	1,440	393	737	.580	.67
January.....	3,320	314	1,370	1.08	1.24
February.....	3,710	564	1,260	.992	1.03
March.....	3,450	693	1,290	1.02	1.18
April.....	4,100	1,110	2,150	1.69	1.89
May.....	1,270	170	606	.477	.55
June.....	950	174	379	.298	.33
July.....	255	78	145	.114	.13
August.....	1,900	44	373	.294	.34
September.....	13,900	155	1,240	.976	1.09
The year.....	13,900	44	1,090	.858	11.66
1926-27					
October.....	18,200	495	4,530	3.57	4.12
November.....	9,640	1,000	2,580	2.03	2.26
December.....	8,520	668	2,530	1.99	2.29
January.....	28,800	520	4,460	3.51	4.05
February.....	4,500	735	1,750	1.38	1.44
March.....	9,320	735	3,170	2.50	2.88
April.....	57,800	2,250	12,700	10.00	11.16
May.....	12,400	1,360	3,060	2.41	2.78
June.....	21,200	700	4,240	3.34	3.73
July.....	7,080	330	684	.539	.62
August.....	14,600	668	3,020	2.38	2.74
September.....	1,450	182	340	.268	.30
The year.....	57,800	182	3,590	2.83	38.37
1927-28					
October.....	38,100	324	5,120	4.03	4.65
November.....	5,820	324	1,970	1.55	1.73
December.....	46,100	505	3,900	3.07	3.54
January.....	12,000	695	2,090	1.65	1.90
February.....	4,280	768	1,690	1.33	1.43
March.....	6,440	730	2,110	1.66	1.91
April.....	36,800	628	7,830	6.17	6.88
May.....	7,080	1,180	2,910	2.29	2.64
June.....	28,300	1,550	7,160	5.64	6.29
July.....	2,980	445	898	.707	.82
August.....	5,400	324	906	.713	.82
September.....	420	121	215	.169	.19
The year.....	46,100	121	3,060	2.41	32.80

WHITE RIVER NEAR BRANSON, MO.

LOCATION.—At the Missouri Pacific Railway bridge, 600 feet above Turkey Creek and 1 mile south of Branson, Taney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 19, 1909, to December 31, 1910; gage-height record and discharge measurements only.

EQUIPMENT.—Chain gage attached to downstream guard rail of bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Conditions not known.

EXTREMES OF STAGE.—Maximum mean daily stage recorded, 15.2 feet May 18, 1910; minimum stage, 2.0 feet December 24-27, 1910.

Data insufficient for determination of discharge.

DISCHARGE MEASUREMENTS OF WHITE RIVER NEAR BRANSON, MO.,
DURING 1909 AND 1910

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1909			
November 22.....	W. N. Gladson.....	3 3	1,280
December 18.....	W. N. Gladson.....	3 4	1,110
1910			
May 17.....	W. N. Gladson.....	10.88	17,500

DAILY GAGE HEIGHT, IN FEET, OF WHITE RIVER NEAR BRANSON, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1909-1910

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909												
1.....											3.10	2.55
2.....											3.00	2.50
3.....											3.00	2.50
4.....											3.00	2.48
5.....											2.95	2.40
6.....											2.95	2.40
7.....											2.95	2.40
8.....											2.98	2.60
9.....											3.15	2.55
10.....											3.02	2.55
11.....											2.95	2.55
12.....											2.90	2.52
13.....											2.82	2.45
14.....											2.75	2.50
15.....											2.75	2.45
16.....											2.70	2.45
17.....											2.65	2.45
18.....											2.60	2.45
19.....										4.00	2.60	2.40
20.....										3.88	2.55	2.40
21.....										3.75	2.60	2.40
22.....										3.65	2.60	2.35
23.....										3.60	2.60	2.35
24.....										3.48	2.55	2.38
25.....										3.40	2.60	2.40
26.....										3.35	2.50	2.40
27.....										3.30	2.50	2.40
28.....										3.25	2.50	2.30
29.....										3.25	2.50	2.30
30.....										3.20	2.48	2.30
31.....										3.20	2.45	.....
1909-10												
1.....	2.30	2.50	2.85	2.95	3.0	7.35	2.6	2.95	4.05	4.2	3.3	2.25
2.....	2.30	2.50	2.85	2.95	3.0	7.15	4.2	3.0	4.0	4.0	3.2	2.5
3.....	2.30	2.50	2.80	2.95	3.0	6.6	3.9	2.95	4.1	4.0	3.0	3.15
4.....	2.30	2.50	2.92	2.9	2.9	5.7	3.85	2.55	4.35	4.25	3.0	3.05
5.....	2.30	2.45	3.95	3.0	2.8	5.55	3.8	2.35	5.9	4.45	3.0	2.9
6.....	2.30	3.05	6.62	3.0	2.9	4.55	4.15	2.5	6.05	4.15	2.85	3.6
7.....	2.30	3.75	7.05	3.0	2.9	4.05	4.05	2.7	5.45	4.45	2.85	3.6
8.....	2.30	3.60	6.48	3.0	2.85	3.8	4.6	3.0	7.2	4.35	3.45	3.5
9.....	2.40	3.30	4.95	3.2	2.85	3.3	4.45	3.9	8.9	3.85	5.1	3.3
10.....	2.42	3.50	4.45	3.2	2.7	3.35	4.85	3.85	10.25	3.55	6.5	3.2
11.....	2.50	3.40	4.20	3.15	2.8	4.1	4.8	3.3	9.45	4.4	5.6	3.2
12.....	2.50	3.28	4.00	3.1	2.8	3.6	4.0	2.9	7.9	9.1	4.55	2.95
13.....	2.50	3.10	3.82	3.15	2.75	3.4	4.05	2.65	6.35	11.8	4.15	2.6
14.....	2.50	3.10	3.70	3.25	2.7	3.3	6.35	2.95	6.0	9.95	3.9	2.7
15.....	2.50	3.10	3.60	3.4	2.6	3.35	5.45	2.9	5.3	8.0	3.85	2.55
16.....	2.50	3.65	3.55	3.5	2.7	3.15	5.1	3.05	4.7	5.95	3.8	2.5
17.....	2.50	3.72	3.50	4.0	2.7	2.9	5.5	11.55	4.15	5.3	3.7	2.4
18.....	2.50	3.80	3.40	3.8	2.7	2.85	5.0	15.2	4.15	5.0	3.05	2.5
19.....	2.45	3.70	3.32	3.65	2.7	2.9	5.2	9.9	3.6	4.25	3.35	2.5
20.....	2.50	3.65	3.22	3.6	3.05	2.8	4.7	7.55	3.35	4.0	3.6	2.45
21.....	2.50	3.60	3.15	3.6	3.9	2.8	4.35	6.4	3.5	3.85	3.45	2.4
22.....	2.50	3.40	3.18	3.5	5.05	2.5	3.85	6.0	3.4	3.75	3.3	2.5
23.....	2.50	3.30	3.30	3.4	5.8	2.3	3.55	5.4	3.45	3.7	3.15	2.5
24.....	2.50	3.25	3.20	3.35	5.9	2.3	3.2	5.35	3.35	3.7	3.0	2.5
25.....	2.50	3.10	3.18	3.35	4.8	2.35	3.35	6.25	3.1	3.95	2.9	2.45
26.....	2.50	3.00	3.05	3.2	3.75	2.35	3.05	6.7	3.4	3.5	2.9	2.4
27.....	2.50	3.00	3.00	3.2	5.25	2.4	3.1	6.55	3.5	3.3	2.85	2.65
28.....	2.50	3.00	3.00	3.2	6.25	2.3	2.95	5.7	3.8	3.0	2.7	3.0
29.....	2.50	2.92	3.00	3.2	2.3	3.0	5.0	4.75	2.9	2.6	2.85
30.....	2.50	2.80	2.90	3.15	2.4	2.95	4.65	5.05	2.95	2.6	2.6
31.....	2.50	3.00	2.9	2.3	4.3	3.35	2.35

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[illegible]

WHITE RIVER AT FORSYTH, MO.

LOCATION.—In SE. $\frac{1}{4}$ sec. 33, T. 24 N., R. 20 W., at bridge on State highway No. 78 at Forsyth, Taney County, one-fourth mile below Swan Creek and 2 miles below hydroelectric plant of Ozark Power & Water Company.

DRAINAGE AREA.—4,610 square miles (measured on map compiled by United States Geological Survey; Scale 1:500,000).

RECORDS AVAILABLE—January 3 to September 30, 1926.

GAGE.—Gurley water-stage recorder fastened to downstream side of first pier from left bank.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of clean gravel. Control is a coarse gravel bar 700 feet below gage; practically permanent.

REGULATION.—Flow is largely regulated by power plant 2 miles upstream.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve fairly well defined. Operation of water-stage recorder satisfactory for periods for which records are given. Records good.

COOPERATION.—Data collected by United States Geological Survey cooperating with the Missouri Bureau of Geology and Mines and the Ozark Power & Water Company.

DAILY DISCHARGE, IN SECOND-FEET, OF WHITE RIVER AT FORSYTH MO., FOR
THE YEAR ENDING SEPTEMBER 30, 1926

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1.....				5,150	1,720	8,160	745	563	2,180
2.....				7,140	1,630	8,140	688	520	1,550
3.....	844.			9,030	2,850	7,640	630	418	1,280
4.....	1,220.			8,400	2,870	7,580	513	464	.....
5.....	1,140.			8,010	1,840	6,320	533	371	.....
6.....	1,300.			7,090	1,480	4,250	456	328	.....
7.....	1,690.			6,500	1,400	2,390	460	326	.....
8.....	1,620.			6,230	1,540	1,800	529	...	.....
9.....				5,920	.....	1,610	673	...	.....
10.....				6,010	4,280	1,770	576	308	.....
11.....				.....	5,350	1,300	423	289	.....
12.....				.....	5,940	1,670	536	331	.....
13.....				7,080	5,280	1,040	813	323	.....
14.....				7,250	4,980	1,300	.....	295	.....
15.....				6,570	3,940	1,210	.....	380	.....
16.....				5,880	2,640	1,510	.....	542	.....
17.....	291.			5,380	3,430	2,670	.....	682	.....
18.....	3,630.			5,100	3,340	2,270	420	824	.....
19.....	4,430.			4,510	3,060	1,420	408	912	1 520
20.....	4,500.			3,700	2,800	248	406	1,020	.....
21.....		534		4,360	2,700	2,140	518	.....	.....
22.....				4,490	3,120	1,690	444	.....	.....
23.....			4,080	3,050	1,900	1,680	372	.....	.....
24.....			3,020	2,730	2,200	1,720	328	.....	.....
25.....			3,860	3,090	3,170	1,380	319	.....	.....
26.....			4,200	3,660	2,530	.....	483	.....	.....
27.....			4,240	3,850	2,320	1,160	451	.....	.....
28.....			1,600	4,100	2,150	994	549	.....	.....
29.....			3,410	2,910	1,560	852	591	3,070	.....
30.....			3,840	2,110	1,310	812	484	1,770	.....
31.....			4,140	.....	3,990	.....	532	2,220	.....

NOTE.—Loss of records due to faulty operation of water-stage recorder.

WHITE RIVER NEAR LEAD HILL, ARK.

LOCATION.—At Bradley's Ferry, 5 miles northeast of Lead Hill, Marion County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1909, to December 31, 1910; gage-height record and discharge measurements only.

EQUIPMENT.—Vertical staff gage in two sections on right bank. Discharge measurements made from ferry boat.

CHANNEL AND CONTROL.—Fishtrap shoals are about 400 feet below the gage.

EXTREMES OF STAGE.—Maximum mean daily stage recorded, 13.2 feet May 18, 1910; minimum stage, 1.1 feet October 1-8, 1909.

Data insufficient for determination of discharge.

DISCHARGE MEASUREMENTS OF WHITE RIVER NEAR LEAD HILL, ARK.,
DURING 1909 AND 1910

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1909			
August 19.....	W. N. Gladson.....	1.1	468
November 22.....	W. N. Gladson.....	2.4	1,400
December 20.....	W. N. Gladson.....	2.4	1,350
1910			
May 17.....	W. N. Gladson.....	5.95	8,700

DAILY GAGE HEIGHT, IN FEET, OF WHITE RIVER NEAR LEAD HILL, ARK., FOR
THE YEARS ENDING SEPTEMBER 30, 1909-1910

[illegible]

WHITE RIVER NEAR COTTER, ARK.

LOCATION.—At the Missouri Pacific Railway bridge at Cotter, Baxter County, three-fourths mile below Falling Ash Creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 21, 1909, to December 31, 1910; gage-height record and discharge measurements only.

EQUIPMENT.—Chain gage on upstream guard rail of bridge. Discharge measurements made from bridge, from ferry boat 500 feet above gage, or by wading.

CHANNEL AND CONTROL.—Conditions not known.

EXTREMES OF STAGE.—Maximum mean daily stage recorded, 14.3 feet May 19, 1910; minimum stage, 1.0 feet September 30 to October 8, 1909.

Data insufficient for determination of discharge.

DISCHARGE MEASUREMENTS OF WHITE RIVER NEAR COTTER, ARK., IN
1909 AND 1910

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1909			
August 31.....	W. N. Gladson.....	1.3	455
November 24.....	W. N. Gladson.....	2.9	1,740
December 22.....	W. N. Gladson.....	2.85	1,660
1910			
May 18.....	W. N. Gladson.....	11.65	28,600

WHITE RIVER BASIN

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DAILY GAGE HEIGHT, IN INCHES, OF WHITE RIVER NEAR COTTER, ARK., FOR
THE YEARS ENDING SEPTEMBER 30, 1909-1910

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909												
1.....											2.65	1.4
2.....											2.6	1.4
3.....											2.45	1.4
4.....											2.4	1.3
5.....											2.3	1.4
6.....											2.3	1.4
7.....											3.15	1.4
8.....											2.45	1.4
9.....											2.35	1.3
10.....											2.2	1.3
11.....											2.1	1.3
12.....											2.3	1.3
13.....											2.25	1.3
14.....											2.1	2.45
15.....											2.0	1.4
16.....											2.0	1.3
17.....											1.9	1.2
18.....											1.8	1.2
19.....											1.8	1.2
20.....											1.75	1.2
21.....										3.9	1.65	1.3
22.....										3.7	1.6	1.3
23.....										3.5	1.5	1.25
24.....										3.4	1.5	1.2
25.....										3.2	1.4	1.2
26.....										3.1	1.4	1.2
27.....										3.1	1.4	1.2
28.....										3.0	1.3	1.1
29.....										2.85	1.3	1.1
30.....										2.75	1.3	1.0
31.....										2.7	1.3	.....
1909-10												
1.....	1.0	1.5	2.2	2.15	2.4	7.55	2.5	3.25	4.85	5.15	3.5	2.65
2.....	1.0	1.45	2.2	2.3	2.3	7.5	2.55	3.15	4.55	5.05	3.6	2.45
3.....	1.0	1.4	2.15	2.35	2.3	7.6	3.05	3.05	4.4	4.5	3.45	2.8
4.....	1.0	1.3	2.1	2.35	2.3	6.85	3.9	2.9	4.4	4.25	3.2	3.4
5.....	1.0	1.3	3.35	2.35	2.3	6.2	3.75	2.85	4.6	4.25	3.0	3.7
6.....	1.0	1.95	6.1	2.35	2.2	5.7	3.75	2.85	4.95	4.65	2.9	4.05
7.....	1.0	3.35	6.9	2.3	2.2	5.25	4.5	2.85	5.65	4.6	2.9	4.5
8.....	1.0	2.45	6.8	2.25	2.2	4.95	4.85	2.75	6.1	4.35	2.9	4.4
9.....	1.35	3.05	6.6	2.25	2.1	4.7	5.3	3.15	9.2	4.1	3.05	4.15
10.....	1.65	2.95	5.55	2.35	2.1	4.5	5.25	3.9	10.95	6.25	6.55	4.0
11.....	1.45	2.7	5.0	2.45	2.1	5.05	5.05	4.15	10.8	5.0	7.35	3.75
12.....	1.2	2.9	4.7	2.75	2.1	5.5	4.9	3.9	10.1	5.3	6.5	3.55
13.....	1.2	2.65	4.35	2.75	2.0	5.2	4.9	3.7	8.05	13.15	5.55	3.35
14.....	1.2	2.55	4.2	2.6	2.0	5.0	4.9	3.5	7.15	12.35	5.05	3.2
15.....	1.2	2.45	3.95	2.55	2.0	4.7	5.95	3.3	6.55	10.95	4.75	3.05
16.....	1.25	2.4	3.75	2.95	2.0	4.5	6.6	3.4	6.0	8.65	4.45	2.85
17.....	1.3	2.55	3.5	3.65	1.9	4.3	5.95	4.45	5.5	7.05	4.4	2.8
18.....	1.3	3.0	3.35	3.85	1.9	4.1	5.9	9.05	5.1	6.75	4.35	2.65
19.....	1.2	3.25	3.3	3.8	1.8	3.9	5.75	14.3	4.75	6.05	4.35	2.6
20.....	1.2	3.35	3.15	3.65	2.0	3.75	5.65	11.15	4.55	5.8	4.15	2.55
21.....	1.3	3.2	3.0	3.5	2.05	3.7	5.45	8.1	4.35	5.3	4.0	2.4
22.....	1.3	3.1	3.0	3.3	2.4	3.45	4.95	7.05	4.15	4.75	3.9	2.35
23.....	1.3	3.05	2.9	3.2	3.1	3.3	4.55	6.4	4.0	4.6	3.85	2.3
24.....	1.3	2.9	2.8	3.1	3.85	3.2	4.45	6.0	3.85	4.6	3.65	2.2
25.....	1.2	2.75	2.65	3.0	3.95	3.05	4.3	5.75	3.65	4.6	3.45	2.2
26.....	1.2	2.55	2.5	2.9	4.1	2.95	4.1	6.35	3.6	4.45	3.25	2.2
27.....	1.25	2.45	2.5	2.9	5.95	2.9	3.9	6.3	3.6	4.35	3.05	2.6
28.....	1.3	2.3	2.5	2.8	7.4	2.8	3.7	6.1	3.6	4.0	3.0	2.75
29.....	1.3	2.3	2.35	2.7	.....	2.7	3.5	5.55	3.75	3.75	2.85	2.6
30.....	1.3	2.2	2.3	2.6	.....	2.55	3.3	5.3	4.3	3.55	2.75	3.1
31.....	1.4	.....	2.2	2.6	.....	2.5	.....	5.3	.....	3.5	2.7	.....

DAILY GAGE HEIGHT, IN INCHES, OF WHITE RIVER NEAR COTTER, ARK., FOR
THE YEARS ENDING SEPTEMBER 30, 1909-1910—Continued

[illegible]

WHITE RIVER NEAR NEWPORT, ARK.

LOCATION.—On line between secs. 16 and 17, T. 11 N., R. 3 W., at Missouri Pacific Railway bridge, $2\frac{1}{2}$ miles southwest of Newport, Jackson County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 18, 1927, to September 30, 1928.

EQUIPMENT.—Chain gage on bridge. Discharge measurements made from bridge.

CHANNEL AND CONTROL.—Banks low and are overflowed. Control is clean gravel bar one-fourth mile downstream; may shift.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 32.8 feet June 25, 1928 (discharge, 163,000 second-feet); minimum stage, 4.80 feet September 30, 1928 (discharge, 7,600 second-feet).

Flood of April, 1927, reached a stage of 36.1 feet; determined by levels to high water marks.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to half-tenths once daily. Records good.

COOPERATION.—Part of gage-height record furnished by Missouri Pacific Railroad Company.

NOTE.—For miscellaneous gaging station data for the White River near Newport see page 105.

DAILY DISCHARGE, IN SECOND FEET, OF WHITE RIVER NEAR NEWPORT, ARK.,
FOR THE YEARS ENDING SEPTEMBER 30, 1927 AND 1928

Day.	Sept.
1927	
1.....	.....
2.....	.....
3.....	.....
4.....	.....
5.....	.....
6.....	.....
7.....	.....
8.....	.....
9.....	.....
10.....	.....
11.....	.....
12.....	.....
13.....	.....
14.....	.....
15.....	.....
16.....	.....
17.....	.....
18.....	10,400
19.....	10,200
20.....	9,800
21.....	9,420
22.....	9,420
23.....	9,420
24.....	9,040
25.....	9,040
26.....	8,680
27.....	9,420
28.....	9,990
29.....	9,800
30.....	10,200
31.....	.....

DAILY DISCHARGE, IN SECOND FEET, OF WHITE RIVER NEAR NEWPORT, ARK.,
FOR THE YEARS ENDING SEPTEMBER 30, 1927 AND 1928—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1927-28												
1.....	26,900	9,990	18,500	49,800	26,200	21,200	22,400	79,600	28,200	91,000	14,200	20,100
2.....	40,400	9,800	17,200	47,500	25,300	21,500	21,200	75,600	25,300	88,600	13,800	18,800
3.....	57,100	9,990	15,300	44,800	23,000	20,700	19,800	72,300	24,600	87,800	13,000	17,000
4.....	71,100	10,200	15,500	40,800	21,000	19,800	18,000	69,000	34,200	84,800	12,800	14,900
5.....	82,600	9,800	16,000	36,400	20,100	19,600	19,300	66,200	52,800	81,000	12,800	13,000
6.....	90,200	9,800	15,800	32,500	19,000	19,300	47,500	63,800	59,000	77,300	12,800	11,800
7.....	91,800	9,800	15,500	27,500	19,000	19,000	73,500	60,600	61,000	73,500	12,600	11,200
8.....	86,400	11,600	14,600	25,300	19,300	18,800	91,800	57,500	61,000	69,800	12,800	11,200
9.....	77,300	12,600	14,000	24,300	19,300	19,600	108,000	54,400	59,000	66,600	14,900	10,600
10.....	70,200	31,100	14,000	24,000	20,700	20,100	115,000	51,300	59,000	63,000	15,800	9,990
11.....	64,600	39,300	14,400	21,800	21,500	22,400	104,000	47,900	68,200	59,800	15,100	10,200
12.....	57,100	37,800	14,000	20,100	21,800	25,900	91,000	44,100	73,900	56,300	14,900	9,990
13.....	49,400	35,700	14,900	19,000	21,800	29,500	82,600	39,600	76,800	55,100	13,800	9,610
14.....	41,500	31,500	41,500	18,200	21,800	31,100	76,800	34,200	90,200	54,000	13,000	9,420
15.....	36,700	28,200	76,800	17,200	21,500	30,100	72,700	29,800	158,000	51,300	12,600	9,800
16.....	32,200	38,200	97,200	16,500	21,200	29,200	68,200	26,200	161,000	47,900	12,600	12,000
17.....	27,800	41,500	103,000	16,200	22,100	30,100	63,800	23,000	144,000	45,600	12,600	12,800
18.....	24,300	49,400	104,000	29,200	22,700	32,500	60,200	24,300	135,000	41,500	11,800	11,000
19.....	21,200	53,600	102,000	38,200	23,000	37,500	56,700	23,000	135,000	36,400	11,400	9,610
20.....	18,800	52,800	90,200	37,800	23,000	39,300	54,400	22,700	121,000	31,100	11,400	8,860
21.....	16,200	48,200	82,600	45,600	22,700	40,000	54,400	27,200	112,000	27,200	11,400	8,680
22.....	14,200	43,000	76,000	48,600	22,400	39,300	76,800	31,800	108,000	24,000	12,400	8,320
23.....	14,900	34,600	71,100	50,100	21,800	37,800	99,400	47,100	125,000	21,500	11,600	8,320
24.....	13,000	32,800	66,200	51,300	21,500	35,700	137,000	57,900	155,000	20,100	12,200	8,140
25.....	13,000	29,500	62,200	49,000	21,800	32,800	155,000	61,800	163,000	19,000	13,600	8,140
26.....	12,400	26,500	59,000	45,200	22,700	31,100	147,000	61,800	147,000	17,200	22,400	7,960
27.....	11,400	24,300	54,400	41,500	23,700	29,200	121,000	59,000	127,000	16,700	24,600	7,960
28.....	11,400	22,400	50,500	37,800	24,000	27,200	100,000	52,800	109,000	16,200	25,600	7,600
29.....	11,000	21,000	52,800	34,200	23,000	26,200	88,600	44,500	98,300	15,500	27,800	7,600
30.....	10,600	19,800	51,300	31,500	.....	25,300	83,700	38,200	93,400	14,900	24,300	7,600
31.....	10,200	.....	50,900	28,800	.....	23,000	.....	32,500	.....	14,400	20,700	.....

MONTHLY DISCHARGE OF WHITE RIVER NEAR NEWPORT, ARK., FOR THE YEARS
ENDING SEPTEMBER 30, 1927 AND 1928

Month	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.
1927			
September 18-30.....	10,400	8,680	9 600
1927-28			
October.....	91,800	10,200	38,900
November.....	53,600	9,800	27,800
December.....	104,000	14,000	48,100
January.....	51,300	16,200	33,900
February.....	26,200	19,000	22,000
March.....	40,000	18,800	27,600
April.....	155,000	18,000	77,700
May.....	79,600	22,700	47,700
June.....	163,000	24,600	95,500
July.....	91,000	14,400	47,400
August.....	27,800	11,400	15,200
September.....	20,100	7,600	10,700
The year.....	163,000	7,600	41,000

WHITE RIVER AT DE VALL'S BLUFF, ARK.

LOCATION.—At highway toll bridge 1 mile northeast of De Vall's Bluff, Prairie County, and 8 miles below Wattensaw Bayou.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 14 to September 30, 1928; gage-height record and discharge measurements only.

EQUIPMENT.—United States Weather Bureau vertical staff gage in two sections. Discharge measurements made from bridge.

CHANNEL AND CONTROL.—Banks low and are overflowed. Bed composed of clean sand; shifting. No well-defined control.

EXTREMES OF STAGE.—Maximum stage recorded, 28.5 feet, June 28 and 29; minimum stage, 7.8 feet, September 30. Reached stage of 33.8 feet April 24, 1927.

COOPERATION.—Gage-height furnished by United States Weather Bureau.

Data insufficient for determination of discharge.

DISCHARGE MEASUREMENTS OF WHITE RIVER AT DE VALL'S BLUFF, ARK.,
DURING THE YEAR ENDING SEPTEMBER 30, 1928

Date.	Made by	Gage height, feet.	Discharge, second-feet.
April 14.....	H. C. Beckman.....	26.10	95,600
April 30.....	V. L. Austin.....	27.88	105,000
August 9.....	A. L. Hill.....	12.10	13,900

DAILY GAGE HEIGHT, IN FEET, OF WHITE RIVER AT DE VALL'S BLUFF, ARK.,
FOR THE YEAR ENDING SEPTEMBER 30, 1928

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1928												
1.....							27.9	21.2	28.0	15.5	17.8	
2.....							27.8	21.2	27.6	14.9	17.6	
3.....							27.5	21.0	27.2	14.3	17.1	
4.....							27.1	21.0	26.7	13.8	16.5	
5.....							26.7	20.8	26.1	13.2	15.9	
6.....							26.2	20.8	25.6	12.8	14.9	
7.....							25.8	20.9	25.1	12.5	13.9	
8.....							25.2	21.0	24.6	12.2	12.8	
9.....							24.7	21.2	24.2	12.1	12.0	
10.....							24.2	21.3	23.9	12.2	11.4	
11.....							23.8	21.5	23.5	12.5	11.0	
12.....							23.3	21.5	23.2	12.8	10.5	
13.....							23.0	21.7	23.0	12.9	10.1	
14.....							23.1	22.7	21.8	12.8	9.7	
15.....							26.4	22.3	22.2	12.7	9.7	
16.....							26.3	22.1	22.9	12.3	9.6	
17.....							26.2	21.8	24.2	11.9	9.5	
18.....							25.8	21.5	25.8	11.5	9.9	
19.....							25.4	21.2	26.9	11.4	10.5	
20.....							25.1	20.8	27.5	11.1	10.5	
21.....							24.9	20.4	28.0	11.0	10.1	
22.....							24.8	20.1	28.2	11.2	9.6	
23.....							24.5	19.9	28.3	11.2	9.1	
24.....							24.6	19.9	28.3	11.7	8.8	
25.....							25.0	20.1	28.0	11.7	8.5	
26.....							25.6	20.3	28.1	11.6	8.3	
27.....							26.5	20.5	28.3	12.1	8.2	
28.....							27.3	20.6	28.5	13.9	8.1	
29.....							27.7	20.9	28.5	17.9	15.1	7.9
30.....							27.9	21.0	28.3	17.0	16.0	7.8
31.....							24.1	.....	16.3	16.9	.....

BUFFALO RIVER NEAR GILBERT, ARK.

LOCATION.—At the Missouri & North Arkansas Railway bridge near Gilbert, Searcy County. Bear Creek enters from the right one-fourth mile upstream.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 16, 1909, to December 31, 1910; gage-height record and discharge measurements only.

EQUIPMENT.—Chain gage on upstream guard rail of bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Conditions not known.

EXTREMES OF STAGE.—Maximum stage recorded, 18.3 feet May 17, 1910; minimum stage, 2.2 feet August 27 to September 4, September 14, 17-20, and October 1-8, 1909.

Data insufficient for determination of discharge.

DISCHARGE MEASUREMENTS OF BUFFALO RIVER NEAR GILBERT, ARK.,
DURING 1909 AND 1910

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1909			
November 29.....	W. N. Gladson.....	3.0	131
December 23.....	W. N. Gladson.....	3.2	155
1910			
May 23.....	W. N. Gladson.....	7.1	2,660
August 1.....	W. N. Gladson.....	2.97	137

DAILY GAGE HEIGHT, IN FEET, OF BUFFALO RIVER NEAR GILBERT, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1909-1910

Day.	July.	Aug.	Sept.
1909			
1.....		2.6	2.2
2.....		2.6	2.2
3.....		2.5	2.2
4.....		2.5	2.2
5.....		2.5	2.3
6.....		2.5	2.3
7.....		2.6	2.3
8.....		2.7	2.3
9.....		2.7	2.3
10.....		2.6	2.3
11.....		2.6	2.3
12.....		2.6	2.3
13.....		2.5	2.3
14.....		2.5	2.2
15.....		2.5	2.3
16.....	3.0	2.5	2.3
17.....	3.0	2.5	2.2
18.....	2.9	2.4	2.2
19.....	2.8	2.4	2.2
20.....	2.8	2.4	2.2
21.....	2.7	2.4	2.3
22.....	2.7	2.3	2.3
23.....	2.7	2.3	2.3
24.....	2.7	2.3	2.3
25.....	2.7	2.3	2.3
26.....	2.7	2.3	2.3
27.....	2.6	2.2	2.3
28.....	2.6	2.2	2.3
29.....	2.6	2.2	2.3
30.....	2.6	2.2	2.3
31.....	2.6	2.2	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909-10												
1.....	2.2	2.5	3.0	2.9	3.2	6.9	3.2	3.5	4.6	4.0	2.9	3.2
2.....	2.2	2.4	3.0	2.9	3.0	6.3	3.1	3.4	4.5	4.3	2.8	3.3
3.....	2.2	2.4	3.8	2.9	3.1	5.7	3.1	3.4	4.4	7.2	2.8	3.3
4.....	2.2	2.4	3.6	2.9	3.1	5.2	6.5	3.4	4.1	6.6	2.8	3.2
5.....	2.2	2.4	3.6	2.9	2.9	4.8	9.3	3.3	4.3	7.2	2.8	3.2
6.....	2.2	2.5	4.3	3.2	3.0	4.6	8.1	3.2	4.3	6.2	2.9	7.2
7.....	2.2	2.5	4.8	3.8	3.0	4.4	6.6	3.2	4.1	5.4	4.2	7.0
8.....	2.2	2.5	4.3	3.7	2.9	4.1	5.8	3.2	4.0	4.9	7.0	5.2
9.....	2.6	2.6	4.0	3.6	2.8	4.0	5.3	3.3	5.4	4.4	6.1	4.6
10.....	2.4	2.5	3.7	3.5	2.8	4.1	5.2	3.2	8.3	4.3	9.3	4.2
11.....	2.3	2.5	3.6	3.5	2.8	4.9	5.0	3.2	8.2	4.0	6.7	3.9
12.....	2.3	2.6	4.6	3.4	2.7	4.7	4.9	3.2	7.4	7.1	5.7	3.7
13.....	2.3	2.6	5.1	3.4	2.8	4.6	5.1	3.1	6.2	8.9	5.1	3.6
14.....	2.3	2.7	4.8	3.4	2.8	4.4	5.2	3.1	5.6	6.5	5.3	3.5
15.....	2.3	2.7	4.5	3.4	2.7	4.2	9.9	3.0	5.0	5.9	15.3	3.4
16.....	2.3	2.9	4.2	3.3	2.8	4.0	7.9	11.2	4.6	5.2	7.1	3.3
17.....	2.3	3.9	4.0	3.4	3.6	4.0	7.5	18.3	4.3	4.7	5.8	3.2
18.....	2.3	4.1	3.6	3.5	3.1	3.8	6.6	11.4	4.1	4.4	6.9	3.1
19.....	2.3	3.9	3.6	4.0	2.9	3.8	5.9	8.3	4.0	4.0	10.3	3.1
20.....	2.3	3.6	3.4	4.0	2.9	3.6	5.6	7.2	3.9	3.9	7.3	3.0
21.....	2.3	3.4	3.4	4.2	2.9	3.5	5.0	6.6	3.8	3.7	6.3	3.0
22.....	2.3	3.3	3.3	4.0	3.0	3.5	4.9	6.0	3.6	3.5	5.5	2.9
23.....	2.3	3.2	3.2	3.9	3.3	3.5	4.7	3.9	3.5	3.5	4.9	3.1
24.....	2.3	3.1	3.2	3.8	3.9	3.3	4.4	10.3	3.5	4.0	4.5	3.1
25.....	2.3	3.1	3.2	3.6	4.1	3.3	4.2	8.1	4.0	4.0	4.2	3.0
26.....	2.3	3.0	3.1	3.6	4.0	3.4	4.2	7.6	3.9	3.7	4.0	2.9
27.....	2.3	3.0	3.1	3.5	7.9	3.3	4.0	6.9	4.4	3.5	3.8	3.1
28.....	2.3	2.9	3.0	3.4	8.4	3.2	3.9	6.1	4.3	3.3	3.6	3.1
29.....	2.3	2.9	3.0	3.3	.....	3.1	3.8	5.6	.....	3.1	3.5	3.1
30.....	2.3	2.9	2.9	3.2	.....	3.1	3.6	5.2	.....	3.1	3.4	3.0
31.....	2.3	.....	2.9	3.2	.....	3.2	.....	4.9	.....	3.0	3.2	.....

DAILY GAGE HEIGHT, IN FEET, OF BUFFALO RIVER NEAR GILBERT, ARK., FOR
THE YEARS ENDING SEPTEMBER 30, 1909-1910—*Continued*

Day.	Oct.	Nov.	Dec.
1910			
1.....	3.0	3.1	2.9
2.....	2.9	3.1	2.8
3.....	2.9	3.1	2.8
4.....	6.5	3.1	2.8
5.....	11.0	3.1	2.9
6.....	9.6	3.1	2.9
7.....	7.7	3.1	2.9
8.....	6.2	3.0	2.8
9.....	5.4	3.0	2.8
10.....	4.8	3.0	2.8
11.....	4.5	3.0	2.8
12.....	4.2	3.0	2.8
13.....	5.4	3.0	2.8
14.....	5.5	3.0	2.8
15.....	5.0	3.0	2.8
16.....	4.6	2.9	2.8
17.....	4.4	2.9	2.8
18.....	4.3	2.9	2.8
19.....	4.0	2.9	2.8
20.....	3.9	2.9	2.8
21.....	3.8	2.9	2.8
22.....	3.7	2.9	2.8
23.....	3.6	2.9	2.8
24.....	3.5	2.9	2.8
25.....	3.4	2.9	2.8
26.....	3.4	2.9	2.8
27.....	3.4	2.9	2.8
28.....	3.3	2.9	2.8
29.....	3.2	2.9	2.9
30.....	3.2	2.9	2.9
31.....	3.2	.....	3.6

NORTH FORK OF WHITE RIVER NEAR TECUMSEH, MO.

LOCATION.—In sec. 16, T. 22 N., R. 12 W., at bridge on State highway No. 80 at west edge of Tecumseh, Ozark County, half a mile below Bryant Creek, 3 miles above Lick Creek, and 8 miles above Missouri-Arkansas line.

DRAINAGE AREA.—1,180 square miles (measured on United States soil survey maps).

RECORDS AVAILABLE.—October 24, 1921, to September 30, 1928.

EQUIPMENT.—Prior to June 29, 1924, a vertical staff gage on left bank 200 feet below bridge; after that date a chain gage on downstream side of bridge set to read same as staff gage. Discharge measurements made from ferry boat, highway bridge, or by wading.

CHANNEL AND CONTROL.—Bed composed of sand, gravel, and boulders. Control is a bar composed of outcropping rock and coarse gravel 400 feet below gage; clean and practically permanent.

EXTREMES OF STAGE.—Maximum stage recorded, 24.0 feet June 13, 1927 (discharge, 53,000 second-feet); minimum stage, 0.38 foot September 26, 27, 29, 30, October 1, 5, and December 6, 1922; minimum discharge, 363 second-feet September 5, 1925.

REGULATION.—Natural regulation due to flow from large springs.

ACCURACY.—Stage-discharge relation changed slightly; not affected by ice. Gage read to hundredths twice daily. Rating curves well defined. Records good.

Data collected by United States Geological Survey cooperating with Missouri Bureau of Geology and Mines.

WHITE RIVER BASIN

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DAILY DISCHARGE, IN SECOND-FEET, OF NORTH FORK OF WHITE RIVER AT
TECUMSEH, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1921-22												
1.....	...	590	1,180	792	750	1,460	5,050	2,140	1,140	792	552	485
2.....	...	590	1,640	750	920	1,360	3 7.0	1,940	1,090	920	552	470
3.....	...	590	1,840	750	1,000	1,270	3,180	1,840	1,040	1,360	552	470
4.....	...	552	1,640	792	920	1,270	2,760	1,940	1,000	878	552	552
5.....	...	552	1,460	792	920	1,270	3,290	1,940	962	750	552	710
6.....	...	552	1,360	792	878	1,360	3,080	1,940	920	710	552	590
7.....	...	552	1,270	750	835	1,360	2,760	1,940	920	710	552	515
8.....	...	552	1,180	792	750	1,360	2,560	1,740	920	670	552	515
9.....	...	590	1,090	792	750	1,740	3,710	1,640	920	670	515	500
10.....	...	552	1,040	792	750	2,870	4,580	1,550	878	670	515	515
11.....	...	552	1,000	792	750	2,560	6,120	1,460	878	750	515	508
12.....	...	552	962	792	710	2,140	3,920	1,460	835	792	515	492
13.....	...	552	920	750	710	1,940	3,400	1,360	835	750	515	485
14.....	...	552	878	750	670	2,560	2,870	1,360	792	710	515	478
15.....	...	552	835	750	670	2,870	2,760	1,270	792	710	515	470
16.....	...	552	835	710	630	2,340	2,560	1,270	792	670	515	470
17.....	...	590	835	710	630	2,040	3,290	1,270	750	670	515	455
18.....	...	2,040	835	710	630	1,940	2,660	1,270	750	670	515	455
19.....	...	6,260	792	710	630	1,940	2,340	1,180	750	630	590	455
20.....	...	2,450	792	710	710	1,940	2,140	1,140	750	630	515	448
21.....	...	1,640	750	670	2,140	1,840	1,940	1,090	710	630	515	448
22.....	...	1,360	750	670	1,550	1,740	1,840	1,180	710	630	515	455
23.....	...	1,180	750	670	3,710	1,640	1,740	1,140	710	590	515	440
24.....	590	2,340	878	630	3,180	1,550	1,740	1,640	710	590	500	440
25.....	552	2,340	962	630	2,350	1,460	1,740	1,550	750	590	492	440
26.....	590	1,740	962	670	1,940	2,040	1,640	1,360	710	670	492	426
27.....	552	1,550	962	630	1,740	3,080	1,840	1,460	710	670	492	426
28.....	552	1,270	920	630	1,550	2,760	2,870	2,140	710	630	485	440
29.....	590	1,180	878	630	.....	2,560	2,660	1,360	670	590	485	433
30.....	590	1,090	835	630	.....	4,810	2,240	1,270	670	590	485	433
31.....	590	.....	835	630	.....	8,000	.....	1,140	.....	590	485	.....
1922-23												
1.....	426	470	485	1,360	26,700	920	1,140	1,740	2,760	1,180	878	670
2.....	440	470	500	1,040	8,000	920	1,140	1,640	2,140	1,180	835	630
3.....	440	462	515	920	5,570	920	1,180	1,550	4,810	1,140	878	670
4.....	440	455	515	792	3,500	1,000	1,550	1,550	3,710	1,090	835	670
5.....	426	455	500	750	2,660	1,000	1,940	1,550	2,870	1,090	792	630
6.....	630	470	492	670	2,240	1,550	1,550	1,460	2,450	1,040	792	630
7.....	590	470	515	670	2,040	1,640	1,460	1,460	2,340	1,000	750	630
8.....	552	470	590	590	1,840	1,550	1,360	1,460	2,040	1,000	750	630
9.....	515	470	552	590	1,640	1,460	1,270	1,270	1,840	962	750	590
10.....	500	455	515	552	1,550	1,360	1,270	1,270	3,500	962	750	590
11.....	470	455	508	552	1,460	2,340	1,180	1,180	5,180	962	750	552
12.....	462	455	500	515	1,460	4,810	1,180	1,180	3,710	920	710	552
13.....	455	500	478	515	1,460	3,290	1,270	1,180	2,980	1,550	710	552
14.....	455	515	470	552	1,360	2,560	1,360	1,460	2,560	1,270	670	552
15.....	470	515	470	590	1,270	3,820	1,270	4,470	2,240	1,040	670	515
16.....	485	508	470	590	1,180	8,000	1,270	8,720	2,040	1,000	670	552
17.....	470	485	455	590	1,180	3,920	1,270	4,250	2,140	1,270	670	552
18.....	455	515	440	590	1,140	3,080	1,270	3,180	2,140	1,090	670	552
19.....	448	515	440	590	1,090	2,450	1,180	2,560	2,040	962	670	630
20.....	440	508	440	1,090	1,090	2,240	1,180	2,240	1,840	1,000	670	630
21.....	448	485	440	3,920	1,040	2,040	1,550	2,040	1,640	962	630	590
22.....	440	470	440	2,340	1,000	1,940	1,740	1,840	1,550	920	670	552
23.....	455	462	448	1,640	962	1,740	1,640	1,740	1,460	920	670	552
24.....	455	455	440	1,460	962	1,640	1,740	1,940	1,460	878	630	552
25.....	455	455	440	1,270	920	1,550	1,640	5,310	1,360	878	630	552
26.....	455	440	426	1,140	962	1,460	1,550	4,360	1,360	878	630	515
27.....	448	440	670	1,180	962	1,360	1,460	3,500	1,270	878	590	515
28.....	455	440	835	1,270	920	1,360	1,940	2,980	1,460	920	590	508
29.....	455	440	750	1,270	.....	1,270	2,140	2,560	1,270	920	590	500
30.....	455	440	962	1,180	.....	1,270	1,940	3,500	1,270	962	590	515
31.....	455	.....	1,550	2,660	.....	1,180	.....	2,450	.....	920	590	.....

DAILY DISCHARGE, IN SECOND-FEET, OF NORTH FORK OF WHITE RIVER AT TECUMSEH, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-28—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1923-24												
1.....	505	512	560	765	680	600	895	1,790	1,690	1,490	895	1,030
2.....	498	505	560	765	680	600	850	1,490	1,490	1,400	895	940
3.....	490	560	505	722	640	600	808	1,300	1,490	1,400	850	808
4.....	520	560	560	722	680	600	765	1,160	1,300	1,300	808	722
5.....	520	560	560	680	680	600	765	1,120	1,160	1,210	765	680
6.....	520	560	560	600	680	600	722	985	1,030	1,160	765	680
7.....	498	520	560	640	640	560	680	895	985	1,120	722	680
8.....	475	520	560	640	640	560	680	895	940	1,080	765	640
9.....	475	520	722	640	600	560	722	850	895	1,080	722	640
10.....	475	490	895	640	600	560	680	808	1,300	1,030	1,400	600
11.....	475	490	1,120	640	640	560	680	765	31,400	940	1,210	560
12.....	468	490	1,030	600	640	560	640	765	6,120	1,080	2,320	600
13.....	460	490	2,840	600	640	560	640	680	3,160	1,400	1,490	600
14.....	475	505	2,320	600	600	560	600	680	2,520	1,690	1,210	600
15.....	475	512	1,590	600	600	560	640	680	2,420	2,320	1,120	600
16.....	498	498	1,300	600	600	560	640	640	2,630	1,690	1,120	600
17.....	520	482	1,120	600	640	560	640	640	2,210	1,400	1,210	600
18.....	520	482	1,030	600	640	560	600	640	2,420	1,490	1,080	600
19.....	520	475	940	600	680	560	600	600	2,000	1,400	940	680
20.....	498	475	985	560	680	600	600	722	1,790	1,400	940	1,030
21.....	482	475	940	560	680	640	600	985	6,400	1,400	895	1,080
22.....	475	505	1,160	560	640	600	600	895	2,840	1,300	850	895
23.....	475	520	1,400	520	680	680	600	850	2,630	1,160	722	765
24.....	475	520	1,300	600	640	680	560	808	2,210	1,120	765	722
25.....	475	505	1,210	640	640	680	560	808	1,900	1,300	808	722
26.....	475	512	1,120	640	640	680	600	808	2,740	1,120	808	722
27.....	475	505	1,030	600	640	680	600	765	2,100	1,030	722	680
28.....	482	475	985	640	640	680	600	895	2,210	940	680	680
29.....	498	520	895	640	600	940	1,300	4,140	1,790	940	722	600
30.....	512	560	895	680	.....	985	1,900	3,050	1,590	940	640	560
31.....	520	.....	850	640	.....	985	.....	2,100	.....	895	680	.....
1924-25												
1.....	560	560	520	808	808	1,030	680	2,000	640	490	438	400
2.....	560	560	475	765	850	940	689	1,690	600	482	445	400
3.....	600	560	520	722	895	940	680	1,490	600	482	438	392
4.....	640	560	560	722	940	895	680	1,400	600	505	445	400
5.....	600	560	600	722	940	895	680	1,300	560	468	445	370
6.....	640	520	600	722	895	850	640	1,160	600	468	445	385
7.....	600	560	600	722	895	808	640	1,080	560	475	438	385
8.....	600	505	600	722	940	850	640	1,030	560	430	452	385
9.....	600	520	600	722	1,080	765	765	1,030	560	460	460	378
10.....	600	520	560	722	1,300	850	985	1,030	560	505	445	385
11.....	600	520	560	680	1,210	808	985	985	560	600	640	385
12.....	600	560	560	680	1,080	765	895	895	560	512	600	385
13.....	560	560	560	680	1,080	765	850	895	640	600	505	385
14.....	560	560	560	680	1,030	808	850	895	640	985	560	560
15.....	520	722	560	680	985	765	808	850	600	850	498	640
16.....	560	722	560	1,120	895	765	808	808	600	722	482	560
17.....	560	680	560	1,400	895	765	808	808	600	600	482	505
18.....	560	680	560	1,300	850	765	850	765	560	560	460	452
19.....	560	640	9,620	1,160	808	765	850	765	560	1,210	430	445
20.....	560	600	2,840	1,120	808	765	850	722	520	765	452	438
21.....	520	600	1,790	985	850	765	808	722	520	640	452	680
22.....	560	600	1,490	940	940	765	765	722	505	600	438	940
23.....	512	600	1,300	895	1,120	722	765	722	505	560	415	850
24.....	520	560	1,160	895	1,210	722	765	680	640	520	415	722
25.....	520	520	1,030	850	1,210	722	1,900	680	560	520	415	3,050
26.....	560	520	940	850	1,120	722	2,940	680	520	512	408	7,360
27.....	520	520	895	850	1,080	722	3,050	640	520	505	400	6,120
28.....	560	520	808	808	1,030	680	4,580	640	498	490	408	2,740
29.....	560	520	808	765	.....	680	3,050	640	512	445	408	1,900
30.....	560	520	808	765	680	2,320	640	490	475	400	1,590
31.....	560	808	765	680	640	...	475	400

WHITE RIVER BASIN

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DAILY DISCHARGE, IN SECOND-FEET, OF NORTH FORK OF WHITE RIVER AT
TECUMSEH, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-28—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1925-26												
1.....	2,840	1,210	1,300	850	1,590	1,400	1,590	1,030	1,080	600	560	560
2.....	2,420	1,210	1,210	850	1,590	1,300	1,590	1,030	985	600	560	560
3.....	1,790	1,160	1,210	850	1,490	1,210	1,490	1,080	1,030	600	520	520
4.....	1,590	1,160	1,900	895	1,400	1,160	1,400	1,030	1,080	600	520	520
5.....	1,590	1,690	2,420	850	1,400	1,120	1,400	1,030	985	600	520	600
6.....	1,400	1,490	2,100	850	1,300	1,120	1,300	985	940	600	505	895
7.....	1,490	3,700	1,790	808	1,210	1,160	1,590	985	895	600	505	765
8.....	1,590	4,030	1,590	808	1,210	1,160	1,900	1,030	1,030	640	475	722
9.....	1,400	2,840	1,490	808	1,160	1,120	1,790	1,080	1,030	600	475	680
10.....	1,210	2,420	1,400	765	1,120	1,210	1,690	1,300	940	600	475	680
11.....	1,120	2,100	1,400	765	1,080	2,210	1,590	1,590	850	560	475	640
12.....	1,790	2,000	1,300	765	1,080	2,630	1,590	1,400	808	560	475	600
13.....	1,790	1,790	1,210	765	1,080	2,520	1,690	1,300	1,790	560	505	640
14.....	1,690	1,590	1,300	765	1,080	2,100	1,690	1,210	808	560	498	640
15.....	3,050	1,590	1,210	765	2,000	1,900	1,590	1,120	765	560	482	600
16.....	4,140	1,490	1,210	765	985	1,690	1,490	1,080	765	560	520	600
17.....	5,050	1,400	1,160	765	940	1,590	1,490	1,030	765	520	1,080	600
18.....	3,160	1,400	1,120	940	985	1,490	1,400	985	722	520	850	560
19.....	2,420	1,300	1,120	1,080	985	1,400	1,300	1,030	722	520	1,030	560
20.....	2,000	1,210	1,120	1,080	985	1,400	1,210	985	680	520	940	560
21.....	1,790	1,210	1,120	1,160	985	1,300	1,210	940	680	560	1,300	560
22.....	1,690	1,160	1,030	1,120	940	1,300	1,210	895	680	560	940	560
23.....	1,490	1,120	985	1,080	940	1,210	1,210	895	680	520	765	560
24.....	3,920	1,120	985	1,120	895	1,210	1,210	850	640	560	722	560
25.....	2,940	1,160	940	1,120	1,490	1,160	1,210	850	640	600	640	722
26.....	2,320	1,210	940	1,120	1,790	1,080	1,160	850	680	560	640	808
27.....	2,000	1,300	895	1,160	1,590	1,080	1,120	808	640	560	600	808
28.....	1,690	1,400	850	1,210	1,490	1,030	1,120	765	640	600	600	850
29.....	1,590	1,300	850	1,400	.....	1,030	1,080	765	640	520	560	2,100
30.....	1,400	1,300	850	1,400	.....	1,080	1,030	808	640	520	560	2,630
31.....	1,300	.....	850	1,490	.....	1,590	.....	985	.....	520	560	.....
1926-27												
1.....	1,880	2,650	1,310	1,420	3,060	1,260	1,000	2,480	1,960	1,640	1,400	1,460
2.....	1,420	2,130	1,260	1,360	3,200	1,210	5,160	2,350	3,300	1,700	1,230	1,400
3.....	1,160	1,760	1,260	1,360	3,060	1,210	4,040	2,350	4,600	1,520	1,280	2,350
4.....	1,760	1,530	1,210	1,310	2,920	1,210	3,340	2,220	3,300	1,460	2,480	1,520
5.....	2,260	1,360	1,160	1,260	2,650	1,210	3,200	2,480	2,610	1,400	1,830	1,400
6.....	1,640	1,260	1,110	1,210	2,520	1,210	2,780	8,500	2,220	1,340	1,520	1,340
7.....	1,420	1,160	1,110	1,210	2,260	1,260	2,650	4,900	2,090	1,340	1,460	1,280
8.....	1,210	1,210	1,110	1,160	2,130	1,360	4,320	3,870	1,960	1,280	1,820	1,230
9.....	1,060	1,360	1,260	1,110	2,000	1,360	4,880	4,600	1,830	1,230	3,720	1,230
10.....	1,420	1,160	1,530	1,060	1,880	1,420	8,600	5,500	1,700	1,230	2,350	1,230
11.....	1,530	1,110	1,530	1,010	1,880	1,360	7,120	3,870	1,700	1,180	1,960	1,180
12.....	1,360	1,060	1,530	1,010	1,760	1,760	6,000	3,300	1,580	1,180	1,700	1,180
13.....	1,210	1,010	1,530	1,210	1,830	1,880	13,300	2,880	1,640	1,120	1,960	1,120
14.....	1,110	3,760	1,310	1,760	1,880	1,760	35,800	2,740	1,580	1,280	7,300	1,060
15.....	1,010	7,850	1,210	1,640	1,880	1,640	22,000	2,480	1,460	1,230	11,000	1,060
16.....	962	3,900	1,160	1,640	1,760	1,640	10,700	2,350	1,400	1,180	5,050	1,060
17.....	915	3,340	1,110	1,530	1,760	1,640	7,600	2,220	1,580	1,120	8,050	1,010
18.....	870	3,200	1,060	1,530	1,640	5,440	12,200	2,220	1,830	1,120	6,100	1,010
19.....	870	2,780	1,060	2,780	1,640	4,600	22,900	2,220	1,830	1,060	4,160	1,010
20.....	870	2,520	1,160	2,390	1,530	4,040	11,000	2,090	2,090	1,400	3,160	1,010
21.....	870	2,260	1,530	2,390	1,530	4,740	7,600	1,960	15,100	1,830	2,740	960
22.....	825	2,130	1,760	4,880	1,530	3,760	5,800	2,220	5,200	1,830	2,480	960
23.....	825	2,000	1,760	5,160	1,530	3,200	4,900	2,220	3,580	1,580	2,220	960
24.....	870	1,880	1,760	6,280	1,420	2,780	4,300	2,220	2,880	1,340	2,090	960
25.....	825	1,760	1,760	5,720	1,360	2,520	3,870	6,550	2,480	1,230	1,830	910
26.....	782	1,760	1,640	5,440	1,310	2,390	3,440	3,580	2,220	1,180	1,830	910
27.....	782	1,640	1,420	4,600	1,310	2,130	3,300	2,880	1,960	1,120	1,700	960
28.....	782	1,530	1,640	4,320	1,260	2,000	3,020	2,480	1,830	1,060	1,640	1,180
29.....	6,280	1,530	1,530	4,040	.....	2,000	2,880	2,350	1,730	1,060	1,700	1,960
30.....	5,580	1,360	1,420	3,760	.....	2,130	2,740	2,090	1,640	1,280	1,580	1,700
31.....	3,620	.....	1,420	3,340	.....	2,390	.....	1,960	.....	1,960	1,520	.....

DAILY DISCHARGE, IN SECOND-FEET, OF NORTH FORK OF WHITE RIVER AT
TECUMSEH, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-28—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.
1927-28												
1.....	1,640	960	1,400	1,830	1,520	1,640	1,520	2,610	1,640	5,950	1,230	1,010
2.....	3,440	1,010	1,400	1,700	1,460	1,520	1,460	2,350	1,700	4,450	1,230	960
3.....	7,600	960	1,340	1,640	1,460	1,520	1,460	2,220	2,740	3,720	1,180	960
4.....	3,020	960	1,280	1,640	1,460	1,520	1,460	2,220	7,900	3,300	1,230	960
5.....	2,220	960	1,230	1,640	1,460	1,580	1,580	2,090	5,050	2,880	1,280	960
6.....	1,960	910	1,230	1,580	1,460	1,520	10,400	1,960	4,020	2,610	1,180	910
7.....	1,700	1,120	1,340	1,580	1,640	1,520	5,350	1,830	3,160	2,480	1,180	910
8.....	1,830	10,900	1,400	1,580	1,830	1,520	3,720	1,830	3,160	2,350	1,120	860
9.....	1,580	4,750	1,280	1,520	1,700	1,830	3,020	1,830	12,000	2,320	1,120	910
10.....	1,520	3,160	1,280	1,520	1,640	1,960	2,740	1,700	9,120	2,220	1,120	910
11.....	1,400	2,610	1,280	1,520	1,580	1,960	2,610	1,700	6,100	2,090	1,120	910
12.....	1,830	2,350	1,340	1,460	1,580	1,960	2,480	1,580	4,600	1,960	1,060	860
13.....	1,830	2,090	15,700	1,460	1,580	1,830	2,220	1,520	33,400	2,090	1,060	860
14.....	1,520	1,960	18,600	1,460	1,960	1,700	2,090	1,520	9,120	1,830	1,010	860
15.....	1,400	2,350	7,150	1,400	2,350	1,830	1,960	1,580	5,950	1,820	1,010	860
16.....	1,340	3,870	5,200	1,400	2,220	2,220	1,830	2,090	5,050	1,700	1,010	860
17.....	1,280	2,880	4,160	1,400	2,090	2,610	1,830	1,700	7,150	1,700	1,010	810
18.....	1,230	2,480	3,440	1,460	1,960	2,480	1,700	1,640	5,800	1,640	1,120	810
19.....	1,180	2,220	3,020	3,160	1,830	2,480	1,700	1,580	4,450	1,580	1,060	760
20.....	1,180	1,960	2,740	3,160	1,830	2,350	1,830	1,520	3,870	1,520	1,010	810
21.....	1,120	1,830	2,480	2,610	1,700	2,220	1,500	1,460	5,800	1,460	1,010	810
22.....	1,060	1,830	2,350	2,350	1,700	2,090	7,900	7,300	4,900	1,520	1,010	760
23.....	1,060	1,640	2,220	2,220	1,700	1,960	6,850	3,870	7,600	1,460	1,010	760
24.....	1,060	1,580	2,090	2,220	1,830	1,960	5,050	2,880	5,950	1,400	2,610	760
25.....	1,010	1,460	2,090	2,090	1,700	1,830	4,020	2,350	4,900	1,340	1,640	760
26.....	1,010	1,460	1,960	1,960	1,700	1,960	3,440	2,090	4,020	1,340	1,830	700
27.....	960	1,400	1,830	1,830	1,700	1,830	3,300	1,960	3,440	1,340	1,400	760
28.....	960	1,340	2,090	1,700	1,640	1,830	3,020	1,830	4,600	1,280	1,230	700
29.....	960	1,340	2,220	1,640	1,640	1,700	2,880	1,700	7,000	1,230	1,180	760
30.....	960	1,280	2,090	1,640	1,640	2,740	1,580	5,050	1,230	1,120	760
31.....	960	1,960	1,580	1,580	1,580	1,230	1,010

WHITE RIVER BASIN

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MONTHLY DISCHARGE OF NORTH FORK OF WHITE RIVER AT TECUMSEH, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928

(Drainage area, 1,180 square miles.)

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1921-22					
November.....	6,260	552	1,200	1.02	1.14
Devenber.....	1,840	750	1,030	.873	1.01
January.....	792	630	718	.608	.70
February.....	3,710	630	1,190	1.01	1.05
March.....	8,000	1,270	2,230	1.89	2.18
April.....	6,120	1,640	2,900	2.46	2.74
May.....	2,140	1,090	1,520	1.29	1.49
June.....	1,140	670	826	.700	.78
July.....	1,360	590	706	.598	.69
August.....	590	485	520	.441	.51
September.....	710	426	481	.408	.46
1922-23					
October.....	630	426	469	0.397	0.46
November.....	515	440	472	.400	.45
December.....	1,550	426	556	.471	.54
January.....	3,920	515	1,080	.915	1.05
February.....	26,700	920	2,720	2.31	2.40
March.....	8,000	920	2,120	1.80	2.08
April.....	2,140	1,140	1,450	1.23	1.37
May.....	8,720	1,180	2,500	2.12	2.44
June.....	5,180	1,270	2,310	1.96	2.19
July.....	1,550	878	1,020	.864	1.00
August.....	878	590	699	.592	.68
September.....	670	500	578	.490	.55
The year.....	26,700	426	1,320	1.12	15.21
1923-24					
October.....	520	460	491	0.416	0.48
November.....	560	475	510	.432	.48
December.....	2,840	505	1,040	.881	1.02
January.....	765	520	630	.534	.62
February.....	680	600	644	.546	.59
March.....	985	560	636	.539	.62
April.....	1,900	560	726	.615	.69
May.....	4,140	600	1,100	.932	1.07
June.....	31,400	895	3,180	2.69	3.00
July.....	2,320	895	1,270	1.08	1.24
August.....	2,320	640	952	.807	.93
September.....	1,080	560	711	.603	.67
The year.....	31,400	460	989	.838	11.41
1924-25					
October.....	640	512	567	0.481	0.55
November.....	722	505	572	.485	.54
December.....	9,620	475	1,110	.941	1.08
January.....	1,400	680	846	.717	.83
February.....	1,300	808	991	.840	.87
March.....	1,030	680	788	.668	.77
April.....	4,580	640	1,220	1.03	1.15
May.....	2,000	640	936	.793	.91
June.....	640	490	565	.479	.53
July.....	1,210	430	578	.490	.56
August.....	640	400	455	.386	.44
September.....	7,360	370	1,150	.975	1.09
The year.....	9,620	370	813	.689	9.32

MONTHLY DISCHARGE OF NORTH FORK OF WHITE RIVER AT TECUMSEH, MO.,
FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928—Continued

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1925-26					
October.....	5,050	1,120	2,120	1.80	2.08
November.....	4,030	1,120	1,640	1.39	1.55
December.....	2,420	850	1,250	1.06	1.22
January.....	1,490	765	973	.825	.95
February.....	2,000	895	1,240	1.05	1.09
March.....	2,630	1,030	1,420	1.20	1.38
April.....	1,900	1,030	1,410	1.19	1.33
May.....	1,590	765	1,020	.864	1.00
June.....	1,790	640	841	.713	.80
July.....	640	520	566	.480	.55
August.....	1,300	475	641	.543	.63
September.....	2,630	520	755	.640	.71
The year.....	5,050	475	1,160	.983	13.29
1926-27					
October.....	6,280	782	1,550	1.31	1.51
November.....	7,850	1,010	2,130	1.81	2.02
December.....	1,760	1,060	1,370	1.16	1.34
January.....	6,280	1,010	2,540	2.15	2.48
February.....	3,200	1,260	1,950	1.65	1.72
March.....	5,440	1,210	2,210	1.87	2.16
April.....	35,800	2,650	8,010	6.79	7.58
May.....	8,500	1,960	3,100	2.63	3.03
June.....	15,100	1,400	2,700	2.29	2.56
July.....	1,960	1,060	1,340	1.14	1.31
August.....	11,000	1,230	2,930	2.48	2.86
September.....	2,350	910	1,220	1.03	1.15
The year.....	35,800	782	2,580	2.19	29.72
1927-28					
October.....	7,600	960	1,670	1.42	1.64
November.....	10,900	910	2,190	1.86	2.08
December.....	18,600	1,230	3,200	2.71	3.12
January.....	3,160	1,400	1,800	1.53	1.76
February.....	2,350	1,460	1,720	1.46	1.58
March.....	2,610	1,520	1,880	1.59	1.83
April.....	11,500	1,460	3,460	2.93	3.27
May.....	7,300	1,460	2,120	1.80	2.08
June.....	33,400	1,640	6,310	5.35	5.97
July.....	5,950	1,230	2,100	1.78	2.05
August.....	2,610	1,010	1,210	1.03	1.19
September.....	1,010	760	847	.718	.80
The year.....	33,400	760	2,370	2.01-	27.37

NORTH FORK OF WHITE RIVER NEAR HENDERSON, ARK.

LOCATION.—At Smith's Ferry, near Henderson, Baxter County. Bayou Creek enters from the left about $11\frac{1}{4}$ miles upstream.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 23, 1909, to December 31, 1910; gage-height record and discharge measurements only.

EQUIPMENT.—Gage is vertical staff in three sections attached to trees on left bank. Discharge measurements made from ferry boat or by wading.

CHANNEL AND CONTROL.—Conditions not known.

EXTREMES OF STAGE.—Maximum stage recorded, 6.1 feet October 6, 1910; minimum stage, 1.05 feet September 17, 1910.

Data insufficient for determination of discharge.

DISCHARGE MEASUREMENTS OF NORTH FORK OF WHITE RIVER NEAR HENDERSON, ARK., DURING 1909 AND 1910

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1909			
September 4.....	W. N. Gladson.....	1.4	851
November 26.....	W. N. Gladson.....	1.6	719
December 21.....	W. N. Gladson.....	1.75	911
1910			
May 19.....	W. N. Gladson.....	1.95	1,110

DAILY GAGE HEIGHT, IN FEET, OF NORTH FORK OF WHITE RIVER NEAR HENDERSON, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1909-1911

Day.	July.	Aug.	Sept.
1909			
1.....	2.1	1.7	
2.....	2.0	1.6	
3.....	2.9	1.55	
4.....	2.9	1.5	
5.....	2.8	1.65	
6.....	2.8	1.6	
7.....	2.7	1.5	
8.....	2.65	1.6	
9.....	2.55	1.6	
10.....	2.5	1.55	
11.....	2.4	1.5	
12.....	2.35	1.5	
13.....	1.95	1.5	
14.....	1.7	1.7	
15.....	1.7	1.85	
16.....	1.7	1.75	
17.....	1.6	1.65	
18.....	1.6	1.5	
19.....	1.6	1.5	
20.....	1.5	1.5	
21.....	1.4	1.65	
22.....	1.4	1.75	
23.....	2.2	1.4	1.6
24.....	2.15	1.35	1.5
25.....	2.1	1.3	1.5
26.....	2.1	1.3	1.5
27.....	2.05	1.3	1.5
28.....	2.0	1.3	1.5
29.....	2.0	2.0	1.6
30.....	2.55	2.0	1.55
31.....	2.1	1.9	.....

DAILY GAGE HEIGHT, IN FEET, OF NORTH FORK OF WHITE RIVER NEAR HENDERSON, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1909-1910—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909-10												
1.....	1.5	1.6	1.8	1.6	1.7	3.45	1.7	1.9	.....	2.0	2.5	1.25
2.....	1.5	1.65	1.85	1.6	1.7	2.9	1.65	1.8	.....	1.85	2.25	1.15
3.....	1.5	1.8	1.9	1.7	1.7	2.75	1.6	1.8	.....	2.0	2.0	2.25
4.....	1.4	1.75	1.8	1.7	1.6	2.7	1.65	1.7	.....	2.3	1.9	2.9
5.....	1.45	1.55	1.8	1.7	1.6	2.65	1.8	1.6	.....	2.75	1.9	2.75
6.....	1.5	1.6	1.85	1.8	1.55	2.55	1.95	1.85	2.5	2.9	1.9	3.2
7.....	1.6	1.7	1.9	1.8	1.5	2.6	2.5	1.9	2.1	2.7	1.9	2.9
8.....	1.6	1.8	2.0	1.8	1.5	2.7	2.55	1.85	2.2	2.55	1.9	2.45
9.....	1.6	1.9	2.5	1.8	1.5	2.8	2.35	1.8	5.55	2.35	1.95	2.25
10.....	1.6	1.85	2.65	1.7	1.6	3.2	2.3	1.85	4.5	4.6	2.4	1.95
11.....	1.5	1.75	1.9	1.7	1.6	3.45	2.2	1.9	3.65	3.4	2.55	1.9
12.....	1.5	1.65	1.9	1.7	1.55	2.95	2.3	2.0	3.45	4.7	2.15	1.8
13.....	1.5	1.6	1.8	1.7	1.5	2.8	2.6	1.9	3.0	5.4	2.0	1.7
14.....	1.45	1.5	1.85	1.65	1.5	2.75	3.1	1.8	3.0	4.0	2.0	1.65
15.....	1.4	1.55	1.85	1.65	1.55	2.6	3.45	1.95	2.45	3.95	1.95	1.45
16.....	1.4	1.7	1.9	1.7	1.6	2.5	3.65	2.4	2.25	3.25	1.9	1.25
17.....	1.5	1.75	1.8	1.75	1.6	2.4	3.55	2.35	2.1	4.3	1.9	1.05
18.....	1.5	1.7	1.7	1.8	1.6	2.3	3.15	2.15	2.1	3.55	2.7	1.7
19.....	1.45	1.65	1.7	1.7	1.6	2.2	2.9	1.95	2.15	2.9	2.4	1.7
20.....	1.4	1.7	1.7	1.7	1.6	2.15	2.45	1.9	2.1	2.7	2.2	1.7
21.....	1.5	1.6	1.75	1.6	1.5	2.1	2.35	1.9	2.1	2.45	2.0	1.7
22.....	1.5	1.65	1.8	1.65	1.5	2.0	2.3	1.9	2.05	2.2	1.9	1.65
23.....	1.5	1.7	1.8	1.7	1.6	2.0	2.2	1.9	2.05	3.85	1.85	1.6
24.....	1.5	1.65	1.7	1.7	1.65	1.95	2.2	1.8	2.0	2.3	1.8	1.65
25.....	1.5	1.6	1.6	1.7	1.7	1.9	2.1	1.8	2.0	2.2	1.8	1.7
26.....	1.5	1.6	1.6	1.6	1.7	1.9	2.1	1.8	2.0	2.05	1.85	1.7
27.....	1.45	1.6	1.55	1.6	4.35	1.8	2.1	1.9	2.0	2.0	1.85	1.75
28.....	1.4	1.7	1.5	1.6	4.0	1.7	2.0	1.9	2.0	2.0	1.8	1.95
29.....	1.4	1.7	1.6	1.6	.....	1.7	1.95	.....	2.0	1.95	1.8	2.0
30.....	1.4	1.8	1.6	1.7	.....	1.8	1.9	.....	2.0	2.4	1.75	1.8
31.....	1.5	.....	1.6	1.7	.....	1.8	.....	.....	.....	2.7	1.55	....
Day.										Oct.	Nov.	Dec.
1910												
1.....										1.7	1.7	1.7
2.....										1.7	1.7	1.7
3.....										1.7	1.7	1.7
4.....										4.75	1.7	1.7
5.....										3.3	1.7	1.7
6.....										6.1	1.7	1.7
7.....										5.65	1.7	1.7
8.....										3.5	1.7	1.7
9.....										3.2	1.7	1.7
10.....										2.6	1.7	1.7
11.....										2.2	1.7	1.7
12.....										2.0	1.7	1.7
13.....										2.0	1.7	1.7
14.....										2.15	1.7	1.7
15.....										2.0	1.7	1.7
16.....										2.0	1.7	1.6
17.....										2.0	1.7	1.6
18.....										2.0	1.7	1.6
19.....										1.9	1.7	1.5
20.....										1.9	1.7	1.5
21.....										1.9	1.7	1.5
22.....										1.9	1.7	1.5
23.....										1.8	1.7	1.5
24.....										1.8	1.7	1.5
25.....										1.7	1.7	1.5
26.....										1.7	1.7	1.5
27.....										1.7	1.7	1.5
28.....										1.7	1.7	1.5
29.....										1.7	1.7	1.6
30.....										1.7	1.7	1.7
31.....										1.7	.....	1.7

CURRENT RIVER AT DONIPHAN, MO.

LOCATION.—In N. $\frac{1}{2}$ sec. 27, T. 23 N., R. 2 E., at highway bridge three-fourths mile west of Doniphan, Ripley County, 2 miles above Briar Creek, and 12 miles below Buffalo Creek.

DRAINAGE AREA.—2,030 square miles (measured on United States soil survey maps); somewhat indefinite on account of numerous large tributary springs.

RECORDS AVAILABLE.—June 14, 1921, to September 30, 1928. The United States Engineer Office, Memphis, Tenn., has records of stage from August, 1918, to June, 1921.

EQUIPMENT.—Chain gage on upstream side of bridge. Prior to May 10, 1922, a painted staff gage on bridge pier and auxiliary staff gage from 0 to 4 feet on right bank. Discharge measurements made from bridge.

CHANNEL AND CONTROL.—Bed composed of clean, coarse gravel; practically permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 17.3 feet April 15, 1927 (discharge, 48,800 second-feet); minimum stage, 0.08 foot September 11-13, 1925; minimum discharge, 1,020 second-feet August 27 to September 14, 1925. Flood of August, 1915, reached a stage of 25.5 feet; determined by United States Army Engineers from levels to flood marks.

REGULATION.—Natural regulation through large springs.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice. Several rating curves used. Gage read to hundredths once daily. Records for 1921 and 1922 are fair, and those for 1923 to 1928 are good.

COOPERATION.—Data collected by United States Geological Survey co-operating with Missouri Bureau of Geology and Mines and Missouri Hydro-Electric Power Company.

DAILY DISCHARGE, IN SECOND-FEET, OF CURRENT RIVER AT DONIPHAN, MO.,
FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.			
1921												
1.....		2,090	1,620	1,620	16.....	2,710	1,790	1,790	4,920			
2.....		3,310	1,620	1,620	17.....	2,450	2,200	1,790	2,710			
3.....		3,310	1,880	1,620	18.....	2,450	2,450	1,790	2,710			
4.....		3,150	1,790	1,620	19.....	2,200	2,200	1,700	2,450			
5.....		2,710	1,790	1,620	20.....	2,090	2,200	1,700	2,450			
6.....		2,450	1,790	1,620	21.....	1,980	1,980	1,620	2,450			
7.....		2,450	1,790	1,620	22.....	1,980	1,980	1,620	2,710			
8.....		2,450	1,790	1,620	23.....	2,450	1,880	1,620	2,320			
9.....		2,200	1,790	1,620	24.....	2,580	1,790	1,620	2,200			
10.....		2,090	1,790	1,620	25.....	2,200	1,790	1,620	7,000			
11.....		1,980	1,790	1,620	26.....	1,980	1,790	1,620	4,600			
12.....		1,980	1,880	1,620	27.....	2,090	1,700	1,620	2,710			
13.....		1,880	1,880	1,620	28.....	2,320	1,700	1,620	2,320			
14.....	3,630	1,790	1,880	1,620	29.....	2,320	1,700	1,620	2,090			
15.....	3,150	1,790	1,880	2,450	30.....	2,090	1,700	1,620	2,090			
					31.....	.....	1,620	1,620	.....		
Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1921-22												
1.....	2,090	1,550	3,800	2,370	2,370	3,660	22,000	7,050	2,370	2,030	1,620	1,620
2.....	1,790	1,540	3,520	2,370	3,660	3,380	20,800	6,540	2,370	2,140	1,620	1,620
3.....	1,790	1,530	3,240	2,250	4,370	3,380	11,300	5,720	2,370	2,730	1,620	1,520
4.....	1,880	1,520	4,520	2,250	4,080	2,980	9,300	5,120	2,250	2,850	1,620	1,520
5.....	1,980	1,510	4,970	2,140	3,800	2,980	8,500	5,120	2,250	2,370	1,620	1,520
6.....	1,880	1,500	4,670	2,030	3,800	2,980	8,120	4,670	2,250	2,250	1,520	2,020
7.....	1,790	1,490	4,080	2,030	3,520	2,980	8,700	4,520	2,140	2,030	1,520	1,920
8.....	1,790	1,480	3,800	2,030	3,240	3,800	7,580	4,370	2,140	2,250	1,520	1,620
9.....	1,790	1,470	4,220	2,250	2,980	3,800	7,580	3,800	2,140	1,920	1,520	1,520
10.....	1,790	1,460	3,520	2,250	2,730	5,420	7,400	3,660	2,370	1,920	1,520	1,520
11.....	1,790	1,450	3,240	2,370	2,610	7,580	7,580	3,800	2,140	1,820	1,520	1,520
12.....	1,790	1,450	3,110	2,250	2,370	6,880	11,100	3,520	2,030	1,920	1,520	1,520
13.....	1,790	1,450	2,730	2,140	2,250	6,040	9,700	3,380	2,030	1,920	1,520	1,420
14.....	1,700	1,450	2,490	2,140	2,140	5,270	7,580	3,380	2,030	1,820	1,520	1,420
15.....	1,700	1,450	2,490	2,140	2,140	5,270	7,220	3,240	2,030	1,820	1,520	1,420
16.....	1,700	1,620	2,250	2,030	2,140	7,580	6,710	3,110	1,920	1,820	1,520	1,420
17.....	1,700	1,790	2,250	2,030	2,140	6,710	6,370	3,110	1,920	1,720	1,620	1,420
18.....	1,700	2,200	2,250	2,030	2,030	5,880	8,700	2,980	1,920	1,720	1,620	1,420
19.....	1,620	10,300	2,140	2,030	2,030	5,720	13,100	2,980	1,920	1,720	1,620	1,420
20.....	1,620	17,600	2,140	2,140	2,140	5,720	7,050	2,850	2,030	1,720	1,620	1,420
21.....	1,620	21,000	2,370	2,140	2,140	6,710	6,710	2,850	1,920	1,720	1,620	1,420
22.....	1,620	7,220	2,370	2,140	2,250	6,370	5,720	2,730	1,820	1,720	1,620	1,420
23.....	1,620	5,720	2,370	2,140	2,250	5,720	5,270	2,850	1,820	1,620	1,720	1,420
24.....	1,620	5,420	2,490	2,030	4,220	5,270	4,820	2,850	1,820	1,620	1,720	1,330
25.....	1,620	5,570	4,080	2,030	6,880	5,120	4,670	2,730	1,820	1,920	1,620	1,330
26.....	1,610	7,050	3,800	2,030	5,270	4,970	4,370	2,730	1,920	2,250	1,520	1,330
27.....	1,600	5,570	3,520	2,030	4,820	5,720	4,970	2,610	1,820	2,140	1,520	1,330
28.....	1,590	5,270	3,110	2,030	4,220	8,900	5,880	2,490	1,820	1,920	1,520	1,330
29.....	1,580	4,970	2,730	2,030	.....	8,700	9,500	2,490	1,920	1,820	1,520	1,330
30.....	1,570	4,370	2,610	2,030	8,900	7,580	2,370	1,920	1,620	1,520	1,330
31.....	1,500	2,370	2,030	12,400	2,370	1,620	1,620

WHITE RIVER BASIN

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DAILY DISCHARGE, IN SECOND-FEET, OF CURRENT RIVER AT DONIPHAN, MO.,
FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1922-23												
1.....	1,330	1,520	1,420	6,370	7,760	2,680	3,240	3,380	4,520	2,780	2,300	1,800
2.....	1,330	1,520	1,420	5,720	22,600	2,580	3,120	3,240	4,370	2,680	2,210	1,800
3.....	1,330	1,520	1,420	4,080	29,600	2,580	3,120	3,240	4,670	2,680	2,120	1,880
4.....	1,330	1,520	1,520	3,380	16,900	2,680	3,380	4,820	8,900	2,580	2,120	1,960
5.....	1,330	1,520	1,420	2,850	8,500	2,780	3,940	7,760	7,220	2,480	2,040	1,960
6.....	1,330	1,520	1,420	2,610	7,050	3,800	3,800	7,940	5,880	2,480	2,040	1,880
7.....	1,330	1,420	1,520	2,370	6,040	4,080	3,660	6,370	5,720	2,390	1,960	1,960
8.....	1,330	1,420	1,520	2,250	5,270	4,220	3,660	5,420	4,820	2,390	1,960	1,960
9.....	1,520	1,420	1,520	2,140	4,820	4,080	3,380	4,820	4,520	2,480	2,040	1,960
10.....	1,520	1,420	1,520	1,920	4,520	3,800	3,240	4,520	4,370	2,300	2,040	1,880
11.....	1,520	1,420	1,620	1,920	4,220	5,720	3,120	4,080	4,370	2,300	2,040	1,800
12.....	1,420	1,420	1,520	1,820	3,940	9,700	3,000	3,940	4,220	2,300	2,040	1,800
13.....	1,420	1,420	1,520	1,820	3,940	13,100	3,520	3,800	3,660	2,300	1,960	1,800
14.....	1,330	1,620	1,420	1,820	3,800	10,100	3,940	3,660	3,800	2,300	1,960	1,800
15.....	1,330	1,620	1,420	1,820	3,660	7,400	4,220	14,200	7,580	2,390	1,960	1,720
16.....	1,420	1,520	1,420	1,820	3,380	17,100	3,940	16,600	9,300	2,300	1,880	1,720
17.....	1,420	1,520	1,330	1,920	3,240	20,800	3,660	20,300	8,900	2,390	1,880	1,720
18.....	1,420	1,620	1,330	1,920	3,240	14,500	3,380	14,900	6,370	2,480	1,880	1,800
19.....	1,420	1,620	1,330	1,920	3,120	9,100	3,240	9,700	5,420	2,390	1,880	1,800
20.....	1,330	1,620	1,330	1,920	2,880	7,220	3,240	7,760	4,820	2,300	1,880	1,800
21.....	1,330	1,620	1,330	7,580	2,880	6,200	3,240	6,200	4,370	2,210	1,880	1,800
22.....	1,330	1,520	1,330	6,540	2,780	5,720	3,240	5,570	3,940	2,210	1,960	1,800
23.....	1,330	1,520	1,330	6,200	2,680	5,120	3,240	5,270	3,800	2,120	1,960	1,720
24.....	1,330	1,420	1,330	4,820	2,580	5,120	3,120	4,970	3,660	2,120	1,960	1,720
25.....	1,330	1,420	1,240	4,370	2,580	4,820	3,120	4,520	3,240	2,120	1,880	1,720
26.....	1,330	1,420	1,240	4,080	2,680	4,220	3,000	4,370	3,120	2,120	1,880	1,720
27.....	1,330	1,420	1,620	3,940	2,680	3,800	3,000	4,220	3,000	2,040	1,880	1,720
28.....	1,330	1,420	2,030	3,940	2,680	3,660	3,120	4,670	3,000	2,040	1,880	1,720
29.....	1,330	1,330	3,240	4,370	.....	3,520	4,220	4,520	2,880	2,040	1,800	1,720
30.....	1,330	1,330	3,380	4,370	.....	3,380	3,660	4,520	2,830	2,040	1,800	1,720
31.....	1,330	.....	3,800	4,520	.....	3,240	.....	4,820	.....	2,300	1,800	.....
1923-24												
1.....	1,720	1,720	1,720	2,210	1,720	1,960	3,520	2,210	6,540	3,260	1,960	1,630
2.....	1,720	1,720	1,720	2,210	1,720	1,960	2,880	2,300	4,820	2,880	1,870	1,630
3.....	1,720	1,720	1,720	2,120	1,800	1,960	2,780	2,300	4,080	2,770	1,960	1,630
4.....	1,720	1,720	1,720	1,960	1,880	1,960	2,580	2,300	3,520	2,550	1,960	1,630
5.....	1,720	1,800	1,720	1,960	2,040	1,960	2,480	2,120	3,130	2,450	1,960	1,560
6.....	1,720	1,800	1,800	1,960	2,300	1,960	2,480	2,040	2,880	2,250	1,960	1,560
7.....	1,640	1,720	1,880	1,960	2,300	1,960	2,390	2,040	2,770	2,150	1,870	1,560
8.....	1,640	1,720	1,880	1,880	2,300	1,880	2,300	2,040	2,660	2,150	1,790	1,560
9.....	1,640	1,720	1,960	1,880	2,120	1,880	2,300	2,040	2,450	2,050	1,790	1,560
10.....	1,640	1,720	2,480	1,960	2,120	1,880	2,210	1,960	2,450	2,050	1,790	1,490
11.....	1,640	1,720	3,240	1,880	2,040	1,800	2,120	1,960	2,450	1,960	1,870	1,490
12.....	1,640	1,720	3,520	1,880	2,040	1,800	2,120	1,960	2,350	1,960	1,790	1,490
13.....	1,640	1,720	3,380	1,800	1,960	1,880	2,120	1,960	2,880	2,550	1,790	1,490
14.....	1,640	1,720	4,080	1,800	1,960	1,880	2,040	1,880	2,770	2,350	1,790	1,560
15.....	1,640	1,640	5,270	1,800	1,960	1,880	2,040	1,880	2,630	2,450	1,870	1,490
16.....	1,640	1,640	3,800	1,880	1,880	1,880	2,040	1,800	2,450	2,450	1,870	1,490
17.....	1,800	1,640	3,120	1,880	1,880	1,880	2,040	1,800	2,350	2,350	2,050	1,490
18.....	1,880	1,640	2,780	1,880	2,040	1,960	1,960	1,720	2,350	2,350	2,250	1,490
19.....	1,960	1,640	2,580	1,880	2,120	1,960	1,960	1,720	2,350	2,250	2,150	1,490
20.....	1,960	1,640	2,480	1,800	2,210	2,040	1,960	1,880	2,350	2,250	2,050	1,490
21.....	1,880	1,640	2,580	1,800	2,210	2,120	1,960	2,040	2,450	2,250	1,960	2,350
22.....	1,800	1,640	2,780	1,800	2,210	2,120	1,880	2,040	7,400	2,250	1,870	2,660
23.....	1,720	1,640	3,240	1,720	2,210	2,210	1,880	2,040	6,040	2,150	1,870	2,150
24.....	1,720	1,640	3,380	1,720	2,120	2,300	1,880	2,120	4,520	2,150	1,870	2,050
25.....	1,640	1,640	3,240	1,720	2,040	2,480	1,800	2,040	3,660	2,450	1,790	1,960
26.....	1,640	1,640	3,120	1,720	2,040	2,580	1,800	2,040	4,820	2,350	1,790	1,870
27.....	1,640	1,640	2,880	1,720	2,040	2,580	1,800	2,210	6,040	2,250	1,790	1,710
28.....	1,640	1,640	2,580	1,720	1,960	2,480	1,800	2,300	5,270	2,050	1,710	1,630
29.....	1,720	1,640	2,580	1,720	1,960	2,480	1,800	3,120	4,520	1,960	1,710	1,560
30.....	1,720	1,720	2,580	1,720	.....	3,120	2,040	6,040	4,080	1,960	1,710	1,560
31.....	1,720	.....	2,390	1,720	.....	3,800	.....	8,300	.....	1,960	1,710	.....

DAILY DISCHARGE, IN SECOND-FEET, OF CURRENT RIVER AT DONIPHAN, MO.,
FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1924-25												
1.....	1,490	1,360	1,310	1,500	1,410	2,760	1,500	4,370	1,320	1,230	1,150	1,020
2.....	1,490	1,360	1,310	1,500	1,410	2,640	1,500	3,660	1,320	1,230	1,080	1,020
3.....	1,490	1,360	1,310	1,500	1,800	2,530	1,500	3,130	1,320	1,230	1,080	1,020
4.....	1,490	1,360	1,310	1,410	2,000	2,420	1,500	2,880	1,230	1,230	1,080	1,020
5.....	1,560	1,360	1,310	1,410	2,000	2,310	1,410	2,760	1,230	1,230	1,080	1,020
6.....	1,560	1,360	1,310	1,410	2,000	2,200	1,410	2,530	1,230	1,150	1,080	1,020
7.....	1,560	1,360	1,310	1,410	1,900	2,000	1,410	2,310	1,230	1,150	1,080	1,020
8.....	1,490	1,360	1,560	1,410	1,900	2,000	1,410	2,200	1,230	1,150	1,080	1,020
9.....	1,490	1,360	1,490	1,320	2,100	1,900	1,500	2,100	1,230	1,230	1,080	1,020
10.....	1,490	1,360	1,490	1,320	2,310	1,900	1,600	2,100	1,230	1,230	1,080	1,020
11.....	1,490	1,360	1,410	1,320	2,420	1,900	1,600	2,000	1,150	1,230	1,080	1,020
12.....	1,420	1,360	1,410	1,320	2,640	1,900	1,800	2,000	1,150	1,320	1,080	1,020
13.....	1,420	1,360	1,410	1,320	2,530	1,900	1,800	2,000	6,540	1,230	1,080	1,020
14.....	1,420	1,360	1,320	1,320	2,310	2,000	1,800	1,900	4,220	1,230	1,080	1,020
15.....	1,420	1,360	1,320	1,320	2,310	2,000	1,600	1,900	2,530	1,230	1,080	1,150
16.....	1,360	1,420	1,230	1,410	2,200	2,000	1,600	1,800	2,100	1,230	1,150	1,230
17.....	1,360	1,420	1,230	1,600	2,200	2,000	1,600	1,700	2,000	1,230	1,150	1,230
18.....	1,360	1,420	1,230	1,900	2,100	1,900	1,600	1,700	1,800	1,150	1,230	1,230
19.....	1,360	1,420	1,410	2,000	1,900	1,900	1,800	1,600	1,700	1,150	1,230	1,230
20.....	1,360	1,420	3,800	2,000	1,800	1,900	2,530	1,600	1,600	1,150	1,150	1,150
21.....	1,360	1,420	3,520	1,900	1,800	1,900	2,420	1,500	1,600	1,150	1,150	1,150
22.....	1,360	1,360	3,000	1,800	1,700	1,900	2,200	1,500	1,500	1,150	1,080	1,410
23.....	1,360	1,360	2,760	1,700	1,900	1,900	2,000	1,500	1,500	1,150	1,080	1,600
24.....	1,360	1,360	2,640	1,600	3,000	1,800	1,900	1,410	1,500	1,080	1,080	1,800
25.....	1,360	1,360	2,420	1,600	3,130	1,800	1,900	1,410	1,500	1,080	1,080	1,700
26.....	1,360	1,310	2,200	1,600	3,260	1,800	3,660	1,320	1,500	1,080	1,080	1,800
27.....	1,360	1,310	1,900	1,600	3,130	1,800	3,800	1,320	1,410	1,080	1,020	2,000
28.....	1,360	1,310	1,800	1,600	3,000	1,800	4,520	1,410	1,410	1,080	1,020	2,880
29.....	1,360	1,310	1,700	1,500	.....	1,700	6,200	1,320	1,320	1,080	1,020	2,880
30.....	1,360	1,310	1,600	1,500	.....	1,700	5,570	1,320	1,320	1,080	1,020	2,310
31.....	1,360	.....	1,600	1,500	.....	1,600	.....	1,320	.....	1,150	1,020	.....
1925-26												
1.....	2,880	2,200	2,630	1,720	3,130	2,640	3,360	2,110	1,630	1,300	1,460	1,230
2.....	2,760	2,200	2,420	1,630	3,660	2,310	3,940	2,110	1,720	1,380	1,540	1,230
3.....	2,760	2,100	2,420	1,630	3,520	2,310	3,940	2,010	1,630	1,300	1,460	1,230
4.....	2,760	2,100	3,390	1,630	3,130	2,760	3,890	2,010	1,630	1,300	1,380	1,230
5.....	2,640	2,420	5,420	1,630	3,130	2,760	3,600	1,910	1,630	1,230	1,380	1,230
6.....	2,200	3,390	7,400	1,630	3,000	2,760	3,390	1,910	1,630	1,270	1,300	1,300
7.....	2,000	3,520	7,050	1,630	2,760	2,760	3,130	1,910	1,540	1,300	1,230	1,300
8.....	1,900	6,040	6,040	1,630	2,640	2,640	3,260	1,910	1,460	1,340	1,230	1,230
9.....	1,700	9,500	5,570	1,630	2,530	2,530	3,800	1,910	1,460	1,380	1,230	1,230
10.....	1,600	6,540	3,940	1,630	2,420	2,530	4,220	1,910	1,460	1,340	1,230	1,230
11.....	1,600	5,570	3,390	1,540	2,420	3,390	4,080	1,910	1,460	1,300	1,170	1,230
12.....	1,500	4,670	3,130	1,540	2,210	5,420	3,940	1,910	1,460	1,230	1,170	1,230
13.....	4,370	4,220	3,130	1,540	2,110	6,200	3,800	1,910	1,460	1,230	1,170	1,230
14.....	4,080	3,800	2,880	1,540	2,110	6,370	3,660	1,910	1,380	1,230	1,170	1,230
15.....	3,940	3,660	2,640	1,540	2,110	5,120	3,520	1,810	1,380	1,230	1,170	1,230
16.....	3,800	3,390	2,530	1,460	2,110	4,370	3,520	1,810	1,380	1,230	1,170	1,230
17.....	7,760	3,260	2,420	1,460	2,010	4,080	3,390	1,720	1,380	1,230	2,640	1,230
18.....	10,300	3,130	2,420	1,810	2,010	3,660	3,260	1,720	1,380	1,170	1,540	1,230
19.....	6,370	3,130	2,420	1,810	2,010	3,390	3,130	2,010	1,300	1,170	1,460	1,170
20.....	4,820	3,000	2,310	1,910	2,010	3,260	2,880	1,910	1,300	1,170	1,380	1,170
21.....	3,800	2,880	2,200	2,760	2,010	3,130	2,640	1,810	1,300	1,170	1,380	1,170
22.....	3,390	2,760	2,200	2,640	2,010	2,880	2,530	1,810	1,300	1,170	1,380	1,170
23.....	3,130	2,640	2,100	2,310	2,010	2,880	2,530	1,720	1,300	1,170	1,300	1,170
24.....	3,800	2,530	2,000	2,310	2,760	2,880	2,530	1,630	1,300	1,170	1,300	1,230
25.....	4,220	2,420	2,000	2,310	4,670	2,760	2,420	1,630	1,300	1,170	1,460	1,230
26.....	4,520	2,530	2,000	2,310	4,670	2,640	2,310	1,630	1,300	1,170	1,380	1,300
27.....	4,370	2,530	1,900	2,310	5,120	2,530	2,310	1,540	1,300	1,540	1,300	1,460
28.....	4,220	2,530	1,800	2,310	3,000	2,420	2,210	1,540	1,300	1,460	1,230	1,540
29.....	3,940	2,640	1,800	2,530	.....	2,420	2,210	1,540	1,230	1,380	1,230	1,630
30.....	3,000	2,530	1,700	2,640	.....	2,420	2,110	1,460	1,230	1,300	1,230	1,630
31.....	2,640	.....	1,700	2,420	.....	3,390	.....	1,460	.....	1,300	1,170	.....

NOTE.—Daily discharge estimated from discharge at Van Buren for October 21- November 15, 1921; June 16, 30, September 30, 1923, and July 6-10, 1926.

WHITE RIVER BASIN

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DAILY DISCHARGE, IN SECOND-FEET, OF CURRENT RIVER AT DONIPHAN, MO.,
FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1926-27												
1.....	2,110	3,800	2,310	2,310	6,370	2,310	9,300	5,940	14,200	3,630	2,620	2,620
2.....	2,420	3,130	2,210	2,310	5,880	2,110	27,000	5,760	39,400	3,480	2,490	2,620
3.....	2,110	2,880	2,110	2,310	5,720	2,210	25,500	5,400	40,800	3,480	2,620	2,620
4.....	1,810	2,420	2,110	2,310	5,570	2,110	9,300	5,400	32,600	3,330	2,900	2,490
5.....	2,110	2,210	2,010	2,310	5,120	2,110	8,300	5,060	21,300	3,180	2,900	2,760
6.....	2,310	2,110	2,010	2,310	4,820	2,110	7,020	10,400	11,700	3,180	2,760	2,900
7.....	2,310	1,910	2,010	2,210	4,520	2,110	6,120	11,300	9,500	3,040	2,620	2,760
8.....	2,110	1,810	1,910	2,110	4,080	2,210	9,500	11,700	8,300	3,040	3,040	3,180
9.....	1,910	1,810	1,910	2,010	3,800	2,210	11,900	8,700	7,380	2,900	5,940	2,620
10.....	1,720	1,910	1,910	2,010	3,660	2,310	12,100	8,700	6,840	2,900	12,100	2,490
11.....	1,720	1,810	1,910	1,810	3,390	3,310	11,700	9,940	6,300	2,760	5,580	2,360
12.....	1,630	1,720	1,810	1,810	3,260	2,640	11,300	8,300	5,940	2,760	4,260	2,240
13.....	1,630	1,630	2,010	1,810	3,260	4,080	13,000	7,200	5,580	2,760	3,630	2,240
14.....	1,540	1,630	2,010	1,910	3,130	4,520	30,600	6,480	5,400	2,900	7,920	2,240
15.....	1,460	2,110	1,910	2,760	3,130	4,080	48,800	5,760	5,580	3,180	10,200	2,120
16.....	1,460	4,970	1,810	3,000	3,260	3,660	42,100	5,220	5,060	3,040	12,600	2,120
17.....	1,380	5,570	1,720	2,880	3,130	3,520	32,200	5,060	4,740	2,760	6,840	2,000
18.....	1,380	4,670	1,720	2,760	3,130	5,880	17,100	4,580	5,760	2,620	6,660	2,120
19.....	1,380	4,220	1,720	3,260	3,000	7,760	20,400	4,740	5,400	2,620	11,900	2,000
20.....	1,380	3,940	1,630	5,270	2,880	9,300	28,200	5,580	5,060	2,620	6,480	2,000
21.....	1,380	3,390	2,110	5,270	2,760	7,760	26,200	5,220	5,220	2,620	5,060	2,000
22.....	1,300	3,260	2,210	11,300	2,760	7,760	14,200	5,060	5,940	2,620	4,580	1,890
23.....	1,300	3,130	2,310	11,500	2,760	7,050	10,800	5,760	9,100	2,620	4,100	1,890
24.....	1,300	2,760	2,420	10,100	2,640	5,880	9,100	6,120	6,120	2,490	3,780	1,890
25.....	1,380	2,640	2,530	8,500	2,530	5,270	8,300	7,200	5,220	2,490	3,480	1,890
26.....	1,380	2,640	2,530	7,580	2,420	4,670	7,920	14,200	4,740	2,360	3,330	1,890
27.....	1,300	2,760	2,420	7,220	2,420	4,220	7,020	17,600	4,420	2,360	3,180	1,890
28.....	1,300	2,640	2,530	7,050	2,310	3,940	6,660	8,500	4,100	2,360	3,040	1,890
29.....	1,300	2,530	2,420	6,200	.....	3,800	6,120	7,380	3,940	2,360	2,900	2,240
30.....	2,420	2,420	2,420	5,720	.....	3,800	6,300	6,480	3,780	2,760	2,760	4,580
31.....	5,570	.....	2,420	6,040	.....	4,220	.....	6,120	.....	2,620	2,760	.....
1927-28												
1.....	2,640	1,810	2,260	3,170	2,900	3,170	2,900	5,100	2,640	8,500	2,770	2,260
2.....	2,640	1,920	3,310	3,170	2,900	3,170	2,770	4,620	2,640	8,500	3,170	2,140
3.....	2,640	1,920	3,170	3,030	2,770	3,030	2,770	4,470	3,310	6,840	3,030	2,140
4.....	3,170	1,920	3,030	2,900	2,770	3,030	2,900	4,170	4,780	6,300	2,770	2,140
5.....	3,170	1,810	2,770	2,900	2,770	3,030	3,030	4,020	5,760	5,580	2,770	2,030
6.....	3,030	1,810	2,640	2,770	2,770	2,900	14,500	3,870	4,470	5,100	2,900	2,030
7.....	2,640	1,810	2,640	2,640	2,900	2,900	17,600	3,730	4,170	4,780	3,030	2,030
8.....	2,380	2,510	2,640	2,640	3,170	2,770	12,600	3,590	3,730	4,480	2,770	2,030
9.....	2,380	4,780	2,640	2,770	3,450	2,770	8,500	3,450	6,840	4,470	2,640	2,030
10.....	2,380	5,760	2,510	2,770	3,450	3,030	6,660	3,450	25,500	4,320	2,510	2,030
11.....	2,260	4,310	2,510	2,640	3,170	2,900	5,760	3,450	40,800	4,020	2,510	1,920
12.....	2,260	3,730	2,510	2,640	3,170	2,900	5,420	3,450	12,800	3,870	2,510	1,920
13.....	2,260	2,260	3,030	2,510	3,170	2,900	5,100	3,170	13,500	3,730	2,510	1,920
14.....	2,380	2,030	33,400	2,510	3,170	2,900	4,780	3,030	43,000	3,590	2,380	1,920
15.....	2,380	2,030	35,000	2,510	3,730	2,900	4,320	2,900	26,200	3,590	2,380	2,510
16.....	2,140	2,030	15,700	2,510	3,310	3,170	4,020	2,900	12,100	3,450	2,380	2,260
17.....	2,140	4,170	9,500	2,380	4,470	3,730	3,870	3,030	9,720	3,310	2,260	2,030
18.....	2,030	4,780	7,920	2,510	4,320	4,320	3,730	2,900	9,100	3,030	2,380	1,920
19.....	2,030	4,020	6,480	2,900	3,730	4,780	3,590	3,030	13,300	3,170	2,640	1,920
20.....	2,030	3,870	5,580	4,320	3,590	4,620	3,590	2,900	11,500	3,170	2,510	1,920
21.....	2,030	3,590	5,100	6,660	3,310	4,470	10,800	3,030	10,800	3,310	2,380	1,920
22.....	1,920	3,170	4,620	5,940	3,310	4,320	16,000	3,450	18,200	3,170	2,260	1,810
23.....	1,920	2,900	4,320	4,320	3,170	4,020	20,000	3,170	20,400	3,030	2,260	1,810
24.....	1,920	2,770	4,020	4,170	3,590	3,870	14,000	3,170	14,500	2,900	2,380	1,810
25.....	1,920	2,640	3,730	4,020	3,730	3,730	9,720	3,030	12,100	2,900	3,030	1,810
26.....	1,920	2,510	3,590	3,870	3,590	3,730	8,900	2,900	10,600	2,900	3,310	1,810
27.....	1,810	2,510	3,310	3,870	3,450	3,590	6,660	2,770	8,100	2,900	2,900	1,810
28.....	1,810	2,380	3,170	3,450	3,310	3,450	6,120	2,770	7,200	3,590	2,770	1,810
29.....	1,810	2,380	3,590	3,310	3,310	3,310	5,760	2,640	7,740	2,770	2,510	1,810
30.....	1,810	2,260	3,450	3,170	.....	3,170	5,420	2,640	12,800	2,770	2,380	1,810
31.....	1,810	.....	3,310	3,030	.....	3,030	.....	2,640	.....	2,640	2,510	.....

MONTHLY DISCHARGE OF CURRENT RIVER AT DONIPHAN, MO., FOR THE YEARS
ENDING SEPTEMBER 30, 1921-1928
(Drainage area, 2,030 square miles.)

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1921					
June, 14-30.....	3,630	1,980	2,390	1.18	0.75
July.....	3,310	1,620	2,130	1.05	1.21
August.....	1,880	1,620	1,730	.852	.98
September.....	7,000	1,620	2,367	1.16	1.29
1921-22					
October.....	2,090	1,560	1,720	0.847	0.98
November.....	21,000	1,450	4,270	2.10	2.34
December.....	4,970	2,140	3,140	1.55	1.79
January.....	2,370	2,030	2,130	1.05	1.21
February.....	6,880	2,030	3,160	1.56	1.62
March.....	12,400	2,980	5,700	2.81	3.24
April.....	22,000	4,370	8,530	4.20	4.69
May.....	7,050	2,370	3,610	1.78	2.05
June.....	2,370	1,820	2,040	1.00	1.12
July.....	2,850	1,620	1,950	.961	1.11
August.....	1,720	1,520	1,570	.773	.89
September.....	2,030	1,330	1,480	.729	.81
The year.....	22,000	1,330	3,270	1.61	21.85
1922-23					
October.....	1,520	1,300	1,370	.675	0.78
November.....	1,620	1,330	1,490	.734	.82
December.....	3,800	1,240	1,640	.808	.93
January.....	7,580	1,820	3,460	1.70	1.96
February.....	29,600	2,580	6,070	2.99	3.11
March.....	20,800	2,580	6,350	3.13	3.61
April.....	4,220	3,000	3,430	1.69	1.89
May.....	20,300	3,240	6,580	3.24	3.74
June.....	9,300	2,830	4,910	2.42	2.70
July.....	2,780	2,040	2,320	1.14	1.31
August.....	2,300	1,800	1,960	.966	1.11
September.....	1,960	1,720	1,810	.892	1.00
The year.....	29,600	1,240	3,430	1.69	22.96
1923-24					
October.....	1,960	1,640	1,710	0.842	0.97
November.....	1,800	1,640	1,690	.833	.93
December.....	5,270	1,720	2,720	1.34	1.54
January.....	2,210	1,720	1,860	.916	1.06
February.....	2,300	1,720	2,040	1.00	1.08
March.....	3,800	1,800	2,150	1.06	1.22
April.....	3,520	1,800	2,170	1.07	1.19
May.....	8,300	1,720	2,390	1.18	1.36
June.....	7,400	2,550	3,640	1.79	2.00
July.....	3,260	1,960	2,300	1.13	1.30
August.....	2,250	1,710	1,880	.926	1.07
September.....	2,660	1,490	1,680	.828	.92
The year.....	8,300	1,490	2,180	1.07	14.64
1924-25					
October.....	1,560	1,360	1,400	0.700	0.81
November.....	1,420	1,310	1,360	.670	.75
December.....	3,800	1,230	1,760	.867	1.00
January.....	2,000	1,320	1,540	.759	.88
February.....	3,260	1,410	2,220	1.09	1.14
March.....	2,760	1,600	1,990	.980	1.13
April.....	6,200	1,410	2,220	1.09	1.22
May.....	4,370	1,320	1,990	.980	1.13
June.....	6,540	1,150	1,730	.852	.95
July.....	1,320	1,080	1,170	.576	.66
August.....	1,230	1,020	1,090	.537	.62
September.....	2,880	1,020	1,370	.675	.75
The year.....	6,540	1,020	1,650	.813	11.04

MONTHLY DISCHARGE OF CURRENT RIVER AT DONIPHAN, MO., FOR THE YEARS
ENDING SEPTEMBER 30, 1921-1928—*Continued*

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum	Minimum.	Mean.	Per square mile.	
1925-26					
October.....	10,300	1,500	3,640	1.79	2.06
November.....	9,500	2,100	3,460	1.70	1.90
December.....	7,400	1,700	3,060	1.51	1.74
January.....	2,760	1,460	1,920	.946	1.09
February.....	5,120	2,010	2,760	1.36	1.42
March.....	6,370	2,310	3,280	1.62	1.87
April.....	4,220	2,110	3,180	1.57	1.75
May.....	2,110	1,460	1,810	.892	1.03
June.....	1,720	1,230	1,420	.700	.78
July.....	1,540	1,170	1,270	.626	.72
August.....	2,640	1,170	1,350	.665	.77
September.....	1,630	1,170	1,270	.626	.70
The year.....	10,300	1,170	2,360	1.16	15.38
1926-27					
October.....	5,570	1,300	1,800	0.887	1.02
November.....	5,570	1,630	2,810	1.38	1.54
December.....	2,530	1,630	2,100	1.03	1.19
January.....	11,500	1,810	4,380	2.16	2.49
February.....	6,370	2,310	3,630	1.79	1.86
March.....	9,300	2,110	4,130	2.03	2.34
April.....	48,800	6,120	16,100	7.93	8.85
May.....	11,700	4,580	7,450	3.67	4.23
June.....	40,800	3,780	9,980	4.92	5.49
July.....	3,630	2,360	2,830	1.39	1.61
August.....	12,600	2,490	5,000	2.46	2.84
September.....	4,580	1,890	2,350	1.16	1.29
The year.....	48,800	1,300	5,200	2.56	34.75
1927-28					
October.....	3,170	1,810	2,250	1.11	1.28
November.....	5,760	1,810	2,880	1.42	1.58
December.....	35,000	2,260	6,180	3.04	3.50
January.....	6,660	2,380	3,290	1.62	1.87
February.....	4,470	2,770	3,330	1.64	1.77
March.....	4,780	2,770	3,410	1.68	1.94
April.....	20,000	2,770	7,390	3.64	4.06
May.....	5,100	2,640	3,340	1.65	1.90
June.....	43,000	2,640	12,600	6.21	6.93
July.....	8,500	2,640	4,090	2.01	2.32
August.....	3,310	2,260	2,630	1.30	1.50
September.....	2,510	1,810	1,980	.975	1.09
The year.....	43,000	1,810	4,430	2.18	29.74

ELEVEN POINT RIVER NEAR BARDLEY, MO.

LOCATION.—In NW. $\frac{1}{4}$ sec. 20, T. 23 N., R. 2 W., at bridge on State highway No. 42, 7 miles southwest of Bardley, Oregon County, 7 miles above Fredericks Ford, and 12 miles above Missouri-Arkansas line.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 22, 1921, to September 30, 1928.

EQUIPMENT.—Chain gage on bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand, gravel, and some outcropping rock. Low-water control is a contracted section of clean, coarse gravel 300 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 18.74 feet, April 14, 1927 (discharge, 27,800 second-feet); minimum stage, 1.06 feet September 6-11, 1925 (discharge, 210 second-feet).

REGULATION.—Natural regulation through flow from large springs.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice. Several rating curves used. Gage read to hundredths once or twice daily. Records fair for 1922; others good except those above 10,000 second-feet, which are fair.

Data collected by United States Geological Survey co-operating with Missouri Bureau of Geology and Mines.

WHITE RIVER BASIN

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DAILY DISCHARGE, IN SECOND-FEET, OF ELEVEN POINT RIVER NEAR BARDLEY,
MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-1923

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1921-22												
1.....		400	745	640	690	910	5,130	1,310	800	690	515	480
2.....		400	910	590	1,020	910	2,930	1,250	855	690	515	450
3.....		400	910	590	910	855	2,450	1,250	800	965	515	450
4.....		400	910	640	855	855	2,150	1,310	800	800	515	450
5.....		400	910	590	800	855	2,080	1,250	800	745	515	450
6.....		400	855	590	745	855	2,080	1,250	745	690	515	450
7.....		400	800	590	690	910	1,870	1,250	745	690	515	450
8.....		400	800	590	640	910	1,800	1,080	745	640	515	450
9.....		400	745	590	640	965	1,940	1,130	745	640	515	450
10.....		400	690	590	640	1,550	1,870	1,130	745	640	515	450
11.....		400	690	590	640	1,490	2,450	1,080	745	590	480	450
12.....		380	745	590	590	1,370	2,370	1,080	690	640	480	450
13.....		400	690	590	590	1,250	2,010	1,020	690	640	480	450
14.....		400	640	590	590	1,310	1,800	1,020	690	640	480	450
15.....		400	690	590	550	1,370	1,670	1,020	690	640	480	450
16.....		400	640	550	550	1,310	1,610	1,020	690	590	550	425
17.....		425	690	550	550	1,310	2,010	965	690	590	515	425
18.....		1,020	640	550	550	1,310	1,940	965	690	590	515	425
19.....		550	640	550	550	1,490	1,670	965	640	590	480	425
20.....		2,770	640	550	550	1,730	1,610	965	640	590	480	425
21.....		1,610	590	515	640	1,610	1,490	910	640	590	480	425
22.....	380	1,310	590	515	690	1,430	1,490	910	640	550	480	425
23.....	380	1,130	590	515	800	1,370	1,370	910	640	550	480	425
24.....	400	1,020	690	515	965	1,250	1,370	910	640	550	480	425
25.....	400	1,370	690	515	965	1,190	1,370	910	640	590	480	425
26.....	400	1,250	745	515	965	1,310	1,310	855	640	590	480	425
27.....	400	1,080	690	515	965	1,870	1,310	855	640	590	480	425
28.....	400	965	690	515	965	1,870	1,370	855	640	550	450	425
29.....	400	910	690	480	.....	1,670	1,370	855	640	550	450	425
30.....	400	855	640	480	.....	2,010	1,370	800	640	550	450	425
31.....	400	.....	640	480	.....	5,820	.....	800	.....	550	450	.....
1922-23												
1.....	405	405	360	700	1,680	700	980	920	1,620	920	650	505
2.....	405	380	360	600	5,460	700	980	920	1,480	920	650	505
3.....	405	380	360	550	3,150	700	980	920	1,480	920	650	600
4.....	405	380	360	505	2,260	700	1,040	1,220	1,620	860	600	550
5.....	405	380	360	505	1,820	700	1,220	1,480	1,420	860	600	505
6.....	405	380	360	470	1,480	1,100	1,160	1,360	1,360	860	600	505
7.....	405	380	360	470	1,420	1,220	1,100	1,290	1,360	800	600	505
8.....	405	380	360	435	1,290	1,160	1,100	1,160	1,290	800	600	505
9.....	405	380	360	435	1,220	1,040	1,040	1,100	1,220	800	600	505
10.....	405	380	360	435	1,160	980	1,040	1,040	1,420	800	600	470
11.....	405	380	360	435	1,040	1,620	980	1,040	3,060	800	600	470
12.....	405	360	360	405	1,040	3,790	980	980	2,110	800	600	470
13.....	380	380	340	405	1,100	2,570	1,100	920	1,680	800	600	470
14.....	380	380	360	405	1,040	1,890	1,160	980	1,480	860	550	470
15.....	380	380	360	405	920	2,330	1,100	5,460	1,750	800	550	470
16.....	380	380	360	380	920	9,150	1,040	5,350	1,890	800	550	470
17.....	380	380	360	380	920	3,330	1,040	3,420	1,680	800	550	470
18.....	380	380	340	380	860	2,410	980	2,410	1,620	800	550	470
19.....	380	380	340	380	860	1,960	920	2,110	1,480	750	550	470
20.....	380	380	340	405	800	1,820	920	1,960	1,360	750	550	470
21.....	380	380	340	3,600	800	1,680	1,040	1,680	1,290	750	550	470
22.....	380	360	340	1,480	750	1,550	980	1,550	1,100	700	550	470
23.....	380	360	340	1,160	750	1,480	980	1,550	1,160	700	550	470
24.....	380	360	340	1,040	750	1,360	920	1,620	1,100	700	550	435
25.....	380	360	340	920	700	1,290	920	1,420	1,100	700	505	435
26.....	380	360	340	860	750	1,290	920	1,360	1,040	700	505	435
27.....	380	360	380	860	750	1,220	920	1,360	1,040	700	505	435
28.....	380	360	435	920	750	1,160	1,100	1,290	1,040	700	505	435
29.....	380	360	435	860	.....	1,100	1,040	1,220	980	700	505	435
30.....	380	360	435	860	.....	1,100	980	1,360	920	750	505	435
31.....	380	.....	550	920	.....	1,040	.....	1,680	.....	650	505	.....

DAILY DISCHARGE, IN SECOND-FEET, OF ELEVEN POINT RIVER NEAR BARDLEY, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1923-24												
1..	425	385	350	505	385	425	505	750	920	700	485	405
2..	425	368	332	505	385	425	485	650	800	700	485	425
3..	425	405	332	465	385	425	465	600	800	650	485	425
4..	425	405	350	465	550	405	465	550	750	650	465	405
5..	425	405	350	445	650	405	465	550	700	600	465	405
6..	405	385	350	425	600	405	445	505	700	600	445	385
7..	405	385	350	425	550	405	425	505	650	600	445	385
8..	405	368	350	425	505	385	425	485	650	550	425	385
9..	405	368	368	405	465	385	425	465	600	550	425	268
10..	385	368	385	445	465	385	405	465	650	550	1,550	368
11..	385	368	425	425	465	368	405	445	650	550	800	350
12..	385	368	445	405	445	368	385	425	650	550	1,290	350
13..	385	368	505	405	445	368	385	405	600	550	700	350
14..	385	350	600	385	425	368	385	405	600	550	650	350
15..	385	350	550	385	425	385	385	405	600	550	550	350
16..	385	350	550	405	425	385	385	385	750	550	550	350
17..	425	350	505	405	425	385	385	385	700	550	600	332
18..	425	350	505	405	445	385	385	385	700	550	550	332
19..	425	350	485	405	465	385	368	368	650	550	505	350
20..	405	350	505	385	465	405	368	445	650	550	505	350
21..	405	350	650	385	485	425	368	600	800	505	485	368
22..	385	368	650	385	465	425	368	600	1,290	505	485	350
23..	385	350	800	385	465	485	350	550	980	505	465	350
24..	385	350	750	385	465	505	350	600	920	505	465	350
25..	385	350	700	385	445	485	350	550	860	550	445	350
26..	385	350	700	385	445	485	350	550	860	600	445	350
27..	385	332	650	368	445	485	350	550	860	505	425	332
28..	385	332	600	368	445	465	350	600	800	505	425	332
29..	385	368	600	385	425	505	385	980	750	485	405	332
30..	385	350	550	385	.....	550	700	1,040	750	505	405	315
31..	385	.....	550	385	.....	550	.....	980	.....	485	405	.....
1924-25												
1.....	320	290	265	278	290	445	320	750	320	290	240	220
2.....	320	290	252	278	290	425	320	700	320	290	240	220
3.....	320	290	252	278	290	425	320	700	320	290	240	220
4.....	320	278	252	265	290	425	320	650	320	290	230	220
5.....	320	278	265	265	305	405	320	650	305	278	230	220
6.....	320	278	265	265	320	385	320	600	305	278	230	210
7.....	320	278	278	265	305	368	305	550	305	278	230	210
8.....	320	278	320	265	305	350	305	550	305	265	240	210
9.....	320	278	320	265	368	350	305	505	290	265	230	210
10.....	305	278	305	265	425	350	320	505	290	265	230	210
11.....	305	278	305	265	445	350	320	505	290	265	230	210
12.....	305	278	278	265	425	350	320	465	290	252	230	220
13.....	305	278	278	265	405	350	320	465	3,690	252	230	220
14.....	305	278	278	252	385	405	320	445	1,960	278	220	220
15.....	305	278	265	252	385	425	305	425	750	278	220	240
16.....	305	305	265	265	368	445	305	425	600	265	220	385
17.....	290	305	265	385	350	445	305	425	550	278	220	240
18.....	290	278	265	405	335	465	305	425	485	290	220	230
19.....	290	265	290	385	335	445	320	405	465	278	220	220
20.....	290	265	290	385	320	405	335	385	425	265	220	220
21.....	290	265	290	368	320	385	335	385	405	265	230	240
22.....	290	265	320	350	350	385	320	385	385	265	230	290
23.....	290	265	320	350	600	385	320	445	368	265	220	305
24.....	290	265	320	320	550	368	305	368	350	265	220	290
25.....	290	265	305	305	550	350	305	368	350	265	220	290
26.....	290	265	290	305	550	350	368	350	335	252	220	385
27.....	290	265	290	290	445	350	485	335	320	252	220	465
28.....	290	265	278	290	445	350	800	335	335	252	220	485
29.....	290	265	278	290	.....	335	800	320	305	252	220	485
30.....	290	265	278	290	.....	335	800	320	305	240	220	465
31.....	290	.....	278	290	.....	320	.....	320	....	240	220	.....

DAILY DISCHARGE, IN SECOND-FEET, OF ELEVEN POINT RIVER NEAR BARDLEY, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1925-26												
1.....	465	750	920	505	800	980	1,220	650	445	350	445	290
2.....	445	750	920	505	800	920	1,160	600	445	350	385	290
3.....	425	700	800	550	800	800	1,040	600	445	350	335	290
4.....	405	700	1,040	505	750	750	980	600	485	350	335	290
5.....	385	800	1,680	505	750	750	920	600	505	350	320	290
6.....	368	1,040	1,420	485	750	750	920	550	485	350	320	305
7.....	368	1,290	1,040	465	700	750	860	550	485	350	305	290
8.....	368	2,490	980	465	700	700	920	550	465	350	290	290
9.....	350	1,890	980	465	700	700	860	550	465	368	290	290
10.....	335	1,680	920	445	650	700	980	550	445	350	290	278
11.....	320	1,290	920	445	600	920	980	550	425	350	290	278
12.....	320	1,290	920	445	600	1,290	980	550	425	335	290	278
13.....	750	1,220	860	445	600	1,360	920	550	425	335	290	278
14.....	750	1,100	800	425	600	1,290	920	550	405	320	425	290
15.....	750	1,100	800	425	600	1,220	860	505	425	320	290	320
16.....	800	1,040	750	425	550	1,160	860	505	425	320	320	320
17.....	1,960	1,040	750	425	550	1,100	860	505	405	320	465	278
18.....	1,680	980	700	505	550	1,040	800	505	405	320	505	278
19.....	1,100	1,040	700	550	550	980	800	550	385	320	405	265
20.....	980	980	700	550	550	920	750	505	385	320	385	265
21.....	860	980	700	600	550	920	750	505	385	320	350	265
22.....	860	980	700	750	505	920	750	505	385	320	335	265
23.....	750	920	650	800	505	860	750	485	385	305	320	265
24.....	1,040	860	600	750	505	860	750	485	385	305	320	278
25.....	1,750	860	600	750	1,550	860	700	465	368	320	335	290
26.....	1,290	800	600	750	1,290	800	700	465	368	320	320	290
27.....	1,100	920	600	700	1,100	750	700	465	368	335	320	290
28.....	980	980	550	700	1,040	750	650	465	368	320	320	305
29.....	920	920	550	750	.....	700	650	445	350	320	305	320
30.....	860	920	505	750	.....	700	650	445	350	320	305	350
31.....	920	.....	505	750	.....	1,160	.....	425	.....	320	290	.....
1926-27												
1.....	375	785	575	730	1,720	845	2,860	2,160	6,860	1,580	1,230	1,030
2.....	346	730	552	730	1,720	730	2,160	2,080	6,440	1,510	1,160	1,030
3.....	332	675	552	702	1,650	730	1,860	2,000	5,800	1,440	1,160	1,030
4.....	346	625	530	675	1,580	702	1,440	3,060	4,600	1,440	1,160	1,030
5.....	405	575	530	675	1,580	675	1,580	4,840	3,260	1,440	1,100	1,030
6.....	405	552	510	650	1,510	675	1,510	5,560	2,770	1,440	1,100	1,030
7.....	390	530	490	625	1,440	702	1,440	3,760	2,500	1,440	1,100	1,030
8.....	375	510	490	600	1,300	675	1,860	2,960	2,320	1,440	1,860	1,030
9.....	360	552	510	575	1,230	675	2,320	2,680	2,160	1,370	1,650	965
10.....	360	575	530	552	1,160	675	4,120	3,260	2,080	1,300	1,440	965
11.....	360	530	490	530	1,160	675	3,560	2,860	2,000	1,300	1,300	965
12.....	332	510	530	510	1,160	845	3,060	2,000	1,860	1,300	1,230	965
13.....	332	490	575	552	1,100	1,100	8,160	2,240	2,860	1,300	1,230	965
14.....	332	490	530	530	1,100	1,100	19,900	2,080	2,500	1,300	1,580	965
15.....	332	1,100	490	530	1,100	965	12,500	2,000	1,860	1,650	1,860	905
16.....	332	1,030	472	552	1,030	965	10,100	1,930	1,790	1,300	1,510	905
17.....	320	1,030	455	575	1,030	965	5,080	1,860	1,720	1,300	1,440	905
18.....	320	1,160	455	575	965	3,260	7,140	1,860	2,000	1,300	2,160	905
19.....	320	1,030	455	650	965	2,860	10,700	1,860	1,860	1,230	1,720	905
20.....	320	965	455	785	965	2,160	7,280	1,860	1,790	1,230	1,580	905
21.....	320	905	730	1,030	905	2,000	4,600	1,790	3,660	1,230	1,440	905
22.....	307	845	730	1,440	905	1,100	3,660	1,860	4,360	1,160	1,370	905
23.....	307	785	785	4,120	845	1,100	3,360	2,160	2,320	1,160	1,300	905
24.....	332	702	785	4,120	845	1,580	2,960	2,160	2,000	1,160	1,230	905
25.....	332	675	730	3,460	845	1,440	2,770	2,080	1,930	1,160	1,230	845
26.....	332	675	702	2,960	785	1,300	2,590	2,680	1,790	1,160	1,160	845
27.....	320	675	675	2,500	785	1,300	2,500	2,240	1,720	1,100	1,160	905
28.....	320	650	702	2,320	845	1,230	2,320	2,160	1,720	1,100	1,160	905
29.....	390	625	702	2,160	.....	1,160	2,240	2,680	1,580	1,100	1,160	905
30.....	1,100	600	730	2,000	.....	1,100	2,320	2,160	1,580	2,000	1,100	2,860
31.....	905	.....	730	1,720	.....	1,160	.....	2,000	.....	1,300	1,100	.....

DAILY DISCHARGE, IN SECOND FEET, OF ELEVEN POINT RIVER NEAR BARDLEY, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1927-28												
1.....	1,230	785	845	1,370	1,100	1,230	1,160	1,580	965	2,960	1,120	900
2.....	1,100	785	845	1,300	1,100	1,160	1,100	1,510	965	2,460	1,040	835
3.....	1,580	785	785	1,300	1,030	1,160	1,100	1,440	1,030	2,160	1,040	835
4.....	1,300	785	785	1,230	1,030	1,160	1,100	1,440	1,100	1,980	1,040	835
5.....	1,100	785	785	1,230	1,030	1,160	1,160	1,370	1,440	1,890	1,120	835
6.....	1,100	785	785	1,230	1,100	1,100	9,600	1,370	1,230	1,810	1,120	802
7.....	1,030	785	845	1,230	1,230	1,100	5,800	1,300	1,160	1,730	1,040	802
8.....	1,030	785	785	1,160	1,160	1,100	2,860	1,300	1,160	1,650	1,040	802
9.....	1,030	1,650	785	1,160	1,160	1,160	2,240	1,300	2,860	1,650	970	770
10.....	1,030	1,370	785	1,160	1,160	1,160	2,000	1,230	3,060	1,570	1,040	770
11.....	965	1,160	785	1,160	1,160	1,160	1,860	1,230	2,320	1,570	1,040	770
12.....	965	1,100	785	1,160	1,100	1,160	1,790	1,160	1,860	1,490	970	770
13.....	965	1,030	12,100	1,160	1,160	1,160	1,650	1,160	12,500	1,490	970	770
14.....	905	1,030	18,700	1,100	1,160	1,160	1,650	1,160	6,300	1,420	970	770
15.....	905	1,030	11,600	1,100	1,160	1,160	1,510	1,100	3,660	1,420	900	900
16.....	905	1,100	2,960	1,100	1,160	1,230	1,440	1,100	2,860	1,420	900	802
17.....	845	1,100	2,500	1,100	1,160	1,370	1,440	1,100	3,060	1,340	900	770
18.....	845	1,030	2,080	1,100	1,160	1,440	1,370	1,030	2,860	1,260	900	770
19.....	845	1,030	1,930	1,300	1,160	1,440	1,370	1,030	2,460	1,420	970	738
20.....	845	965	1,790	1,440	1,100	1,370	1,370	1,030	2,160	1,260	900	738
21.....	845	965	1,720	1,370	1,100	1,300	7,280	1,030	3,880	1,260	900	738
22.....	845	965	1,650	1,300	1,100	1,300	4,720	1,160	4,120	1,260	900	705
23.....	845	965	1,580	1,300	1,230	1,230	2,960	1,160	5,080	1,340	900	705
24.....	845	965	1,510	1,230	1,440	1,230	2,410	1,100	4,360	1,260	1,040	705
25.....	845	905	1,440	1,230	1,370	1,230	2,000	1,030	3,260	1,260	1,040	705
26.....	845	905	1,440	1,230	1,300	1,230	1,860	1,030	2,860	1,190	900	705
27.....	785	905	1,370	1,160	1,300	1,440	1,790	1,030	2,460	1,120	900	705
28.....	785	905	1,440	1,160	1,300	1,440	1,720	1,030	2,260	1,120	900	705
29.....	785	845	1,510	1,160	1,230	1,300	1,650	965	3,560	1,120	900	705
30.....	785	845	1,510	1,160	.....	1,230	1,650	965	2,860	1,120	835	675
31.....	785	.....	1,440	1,100	.....	1,160	.....	965	.....	1,120	.....	.....

NOTE.—Daily discharge interpolated August 4-7, 1922; gage not read.

WHITE RIVER BASIN

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MONTHLY DISCHARGE OF ELEVEN POINT RIVER NEAR BARDLEY, MO., FOR THE
YEARS ENDING SEPTEMBER 30, 1921-1928

Month	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.
1921-22			
October 22-31.....	400	380	396
November.....	2,770	400	755
December.....	910	590	717
January.....	640	480	557
February.....	1,020	550	725
March.....	5,820	855	1,450
April.....	5,130	1,310	1,910
May.....	1,310	800	1,030
June.....	855	640	701
July.....	965	550	629
August.....	550	450	492
September.....	480	425	438
1922-23			
October.....	405	380	390
November.....	405	360	374
December.....	550	340	368
January.....	3,600	380	728
February.....	5,460	700	1,300
March.....	9,150	700	1,750
April.....	1,220	920	1,020
May.....	5,460	920	1,680
June.....	3,060	920	1,440
July.....	920	650	782
August.....	650	505	566
September.....	600	435	477
The year.....	9,150	340	904
1923-24			
October.....	425	385	399
November.....	405	332	363
December.....	800	332	509
January.....	505	368	410
February.....	650	385	464
March.....	550	368	426
April.....	700	350	409
May.....	1,040	368	554
June.....	1,290	600	755
July.....	700	485	558
August.....	1,550	405	556
September.....	425	315	362
The year.....	1,550	315	481
1924-25			
October.....	320	290	302
November.....	365	265	276
December.....	320	252	284
January.....	405	252	299
February.....	600	290	384
March.....	465	320	385
April.....	800	305	372
May.....	750	320	466
June.....	3,690	290	535
July.....	290	240	268
August.....	240	220	226
September.....	485	210	275
The year.....	3,690	210	339

MONTHLY DISCHARGE OF ELEVEN POINT RIVER NEAR BARDLEY, MO., FOR THE YEARS ENDING SEPTEMBER 30, 1921-1928—*Continued*

Month.	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.
1925-26			
October.....	1,960	320	795
November.....	2,490	700	1,080
December.....	1,680	505	812
January.....	800	425	567
February.....	1,550	505	721
March.....	1,360	700	915
April.....	1,220	650	855
May.....	650	425	524
June.....	505	350	416
July.....	368	305	332
August.....	505	290	339
September.....	350	265	289
The year.....	2,490	235	636
1926-27			
October.....	1,580	785	952
November.....	1,650	785	968
December.....	18,700	785	2,580
January.....	1,440	1,100	1,210
February.....	1,440	1,030	1,170
March.....	1,440	1,100	1,230
April.....	9,600	1,100	2,390
May.....	1,580	965	1,170
June.....	12,500	965	3,010
July.....	2,960	1,120	1,520
August.....	1,120	835	971
September.....	900	675	768
The year.....	18,700	675	1,490
1927-28			
October.....	1,100	307	386
November.....	1,160	490	719
December.....	785	455	586
January.....	4,120	510	1,290
February.....	1,720	785	1,150
March.....	3,260	675	1,180
April.....	19,900	1,440	4,600
May.....	5,560	1,790	2,480
June.....	6,860	1,580	2,720
July.....	2,000	1,100	1,330
August.....	2,160	1,100	1,350
September.....	2,860	845	1,010
The year.....	19,900	307	1,560

LITTLE RED RIVER NEAR HEBER SPRINGS, ARK.

LOCATION.—In NE. $\frac{1}{4}$ sec. 1, T. 10 N., R. 10 W., at county highway suspension bridge one-half mile west of Tumbling Shoals store and postoffice and 4 miles northeast of Heber Springs, Cleburne County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 15, 1927, to September 30, 1928.

EQUIPMENT.—Gage is vertical staff in several sections attached to trees on left bank 150 feet upstream from bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Banks do not overflow; heavily wooded along stream. Bed composed of rocks, sand, and gravel; permanent. Low water control is small rock and gravel riffle one-fourth mile downstream; permanent. High water control is restricted section of channel at island one-half mile downstream.

EXTREMES OF STAGE.—Maximum stage recorded, 42.35 feet at 1:45 p. m., April 6; minimum stage, 3.07 feet September 30, 1928.

High water of April, 1927, reached a stage of 44.0 feet as determined from levels to water marks.

ACCURACY.—Gage read to hundredths once or twice daily. Data not sufficient for determination of discharge.

COOPERATION.—Arkansas Power & Light Company, H. C. Couch, President.

DISCHARGE MEASUREMENTS OF LITTLE RED RIVER NEAR HEBER SPRINGS, ARK., DURING YEARS ENDING SEPTEMBER 30, 1927 AND 1928

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1927			
May 25.....	H. C. Beckman.....	16.29	11,260
July 20.....	H. C. Beckman.....	4.72	289
September 17.....	V. L. Austin.....	3.86	111
1928			
January 13.....	V. L. Austin.....	6.94	1,130
March 11.....	H. C. Beckman.....	8.10	1,810
April 27.....	V. L. Austin.....	9.56	2,740
August 11.....	A. L. Hill.....	4.22	195

DAILY GAGE HEIGHT, IN FEET, OF LITTLE RED RIVER NEAR HEBER SPRINGS,
ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1927 AND 1928

Day.												Sept.
1927												
1.												
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												
13.												
14.												
15.												4.00
16.												3.93
17.												3.86
18.												3.78
19.												3.72
20.												3.63
21.												3.57
22.												3.52
23.												3.48
24.												3.45
25.												3.42
26.												3.40
27.												6.88
28.												7.71
29.												6.39
30.												11.22
31.												
Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1927-28												
1.	14.89	4.24	6.00	8.45	6.40	6.20	5.30	7.80	5.91	7.56	3.69	5.27
2.	9.91	4.28	5.72	7.80	6.20	6.10	5.20	7.50	5.72	7.07	3.67	5.57
3.	13.94	4.28	5.60	7.30	6.00	5.95	5.20	7.10	5.60	6.71	3.59	4.95
4.	11.88	4.30	5.54	6.98	5.82	5.90	5.20	6.90	5.95	6.29	3.55	4.62
5.	9.44	4.28	5.42	6.77	5.98	6.45	28.90	6.30	8.51	5.84	3.52	4.37
6.	7.88	4.28	5.27	6.43	.....	7.25	41.16	6.10	8.00	5.63	3.43	4.20
7.	7.76	4.24	5.12	6.37	6.95	7.05	26.10	5.90	7.18	5.39	3.52	4.01
8.	9.88	5.62	4.97	7.93	8.15	6.95	14.30	5.70	6.45	5.26	3.65	3.92
9.	8.18	6.48	4.92	7.75	8.15	8.60	12.00	5.50	6.05	4.98	3.44	3.83
10.	7.35	6.21	5.45	7.63	7.70	8.45	10.70	5.30	7.15	4.83	3.36	3.75
11.	6.78	5.88	6.16	7.25	7.37	8.11	9.80	5.20	7.00	4.72	3.93	3.67
12.	6.89	6.16	8.30	7.05	7.10	7.80	9.10	5.10	6.47	4.59	3.99	3.62
13.	7.02	6.26	14.28	6.93	7.00	7.60	8.50	4.90	6.66	4.47	3.79	3.57
14.	6.60	6.19	28.72	6.85	7.10	7.30	8.75	4.80	14.00	4.50	3.62	3.51
15.	6.18	9.42	18.00	6.75	7.32	7.00	8.00	4.70	16.35	4.42	3.61	3.47
16.	5.88	21.12	13.40	6.72	7.40	8.40	7.65	4.70	12.75	4.43	3.47	3.65
17.	5.64	12.88	11.61	7.35	7.20	9.65	7.30	4.70	11.75	4.35	3.41	3.98
18.	5.44	10.92	10.18	14.42	7.10	9.30	7.00	4.80	18.00	4.32	3.32	3.77
19.	5.22	9.78	9.32	23.55	6.95	8.65	6.75	4.90	12.05	4.30	3.53	3.79
20.	5.06	9.28	8.55	14.92	6.75	8.25	6.50	5.50	9.95	4.42	6.90	3.65
21.	4.93	8.74	8.00	12.48	6.50	7.90	14.00	5.60	10.62	4.45	5.74	3.57
22.	4.86	8.32	7.52	10.98	6.35	7.50	25.40	7.60	12.40	4.42	5.09	3.49
23.	4.78	7.44	7.28	10.10	6.55	7.20	18.30	10.90	16.95	4.35	4.97	3.41
24.	4.68	7.55	7.06	9.45	6.75	7.00	13.80	9.10	17.10	4.67	4.77	3.35
25.	4.62	7.18	6.76	8.88	7.00	6.80	11.90	7.90	12.15	4.36	7.60	3.27
26.	4.53	6.95	6.42	.....	6.85	6.45	10.40	7.00	11.45	4.17	7.31	3.22
27.	4.46	6.75	6.05	7.90	6.70	6.40	9.58	6.25	10.80	4.07	6.00	3.17
28.	4.41	6.48	6.25	7.46	6.40	6.20	9.00	5.85	8.95	4.12	5.42	3.13
29.	4.34	6.29	9.05	7.22	6.35	6.15	8.40	5.50	8.65	3.91	4.87	3.12
30.	4.30	6.12	9.92	7.00	.....	5.80	8.00	5.25	8.27	3.82	4.77	3.07
31.	4.28	.....	9.16	7.84	.....	5.55	.....	5.03	.....	3.73	5.72	.....

LITTLE RED RIVER NEAR PANGBURN, ARK.

LOCATION.—At Skillern's Ferry, near Pangburn, White County. Big Red Creek enters about half a mile downstream.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 15, 1909, to December 31, 1910; gage-height record and discharge measurements only.

EQUIPMENT.—Vertical staff gage in three sections attached to trees on right bank. Discharge measurements made from ferry boat or by wading.

CHANNEL AND CONTROL.—Conditions not known.

EXTREMES OF STAGE.—Maximum stage recorded, 25.4 feet May 25, 1910; minimum stage, 1.3 feet September 18-20, 1909.

Data not sufficient for determination of discharge.

DISCHARGE MEASUREMENTS OF LITTLE RED RIVER NEAR PANGBURN, ARK., DURING 1909 AND 1910

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1909			
November 28.....	W. N. Gladson.....	3.1	329
December 25.....	W. N. Gladson.....	3.7	637
1910			
May 21.....	W. N. Gladson.....	8.1	3,380

DAILY GAGE HEIGHT, IN FEET, OF LITTLE RED RIVER NEAR PANGBURN, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1909-1910

Day.	July	Aug.	Sept.
1909			
1.....		2.0	1.5
2.....		1.9	1.4
3.....		1.9	1.4
4.....		1.8	1.5
5.....		1.8	1.5
6.....		1.8	1.5
7.....		1.8	1.8
8.....		1.7	1.6
9.....		1.7	1.5
10.....		1.7	1.5
11.....		1.7	1.5
12.....		1.7	1.4
13.....		1.7	1.4
14.....	2.65	1.6	1.4
15.....	2.9	1.6	1.4
16.....	3.2	1.6	1.4
17.....	3.0	1.7	1.4
18.....	3.2	1.8	1.3
19.....	3.1	1.7	1.3
20.....	3.1	1.7	1.3
21.....	3.1	1.7	1.6
22.....	2.1	1.7	1.8
23.....	2.3	1.6	2.2
24.....	2.2	1.6	1.8
25.....	2.2	1.6	1.6
26.....	2.1	1.6	1.6
27.....	2.1	1.6	1.5
28.....	2.7	1.6	1.5
29.....	2.2	1.6	1.4
30.....	2.0	1.5	1.4
31.....	2.0	1.5	.....

DAILY GAGE HEIGHT, IN FEET, OF LITTLE RED RIVER NEAR PANGBURN, ARK.,
FOR THE YEARS ENDING SEPTEMBER 30, 1909-1910—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909-10												
1.....	1.4	1.6	3.0	3.1	3.7	16.4	3.5	3.7	6.2	3.9	3.1	2.8
2.....	1.5	1.6	2.9	3.1	3.6	11.4	3.3	3.5	5.3	4.1	3.0	2.8
3.....	1.5	1.6	2.9	3.0	3.4	9.2	3.5	3.4	4.5	9.6	2.9	2.8
4.....	1.5	1.6	5.4	3.0	3.3	7.9	4.1	3.3	4.8	10.5	2.7	2.9
5.....	1.5	1.5	4.8	3.1	3.2	7.1	6.7	3.2	4.7	12.4	2.6	2.9
6.....	1.6	1.5	4.5	3.4	3.0	6.5	24.3	3.1	4.5	9.3	2.6	2.8
7.....	1.6	2.2	5.1	6.4	3.0	6.1	16.0	3.1	4.3	7.5	2.5	2.7
8.....	1.5	2.5	5.0	6.3	3.1	5.6	12.6	2.9	4.6	6.4	2.6	2.6
9.....	1.5	2.4	4.8	5.7	3.0	5.3	9.4	2.9	5.4	5.5	2.8	3.7
10.....	1.5	2.3	4.4	5.4	3.0	5.1	7.5	2.8	12.0	4.7	4.1	3.3
11.....	1.4	2.4	4.5	5.1	2.9	6.6	7.1	2.8	18.5	4.4	6.6	2.8
12.....	1.4	3.0	7.5	4.9	2.9	8.6	6.7	2.7	16.4	9.1	5.3	2.8
13.....	1.4	2.9	13.4	4.8	2.8	7.3	6.5	2.7	11.9	7.4	4.4	2.7
14.....	1.5	2.9	10.6	5.1	2.8	6.5	6.3	2.6	8.7	7.3	4.5	2.6
15.....	1.5	3.0	8.2	5.5	2.7	6.0	6.0	2.6	6.8	7.1	4.8	2.5
16.....	1.5	2.9	7.0	5.4	2.7	5.6	14.0	2.9	5.9	6.7	5.6	2.4
17.....	1.5	2.9	6.4	5.2	2.8	5.2	14.2	4.6	5.4	6.0	6.0	2.4
18.....	1.5	8.4	5.8	5.1	2.8	4.8	11.8	20.1	4.8	5.5	5.2	2.3
19.....	1.5	6.4	5.2	5.4	2.9	4.5	9.4	13.6	4.3	5.0	4.8	2.3
20.....	1.5	5.0	4.9	7.5	2.8	4.3	8.0	9.8	4.0	4.4	4.6	2.2
21.....	1.6	4.3	4.7	7.1	2.8	4.3	7.0	8.4	3.8	4.0	6.0	2.2
22.....	1.5	3.9	4.3	6.3	2.8	4.2	6.4	7.8	3.6	3.6	5.2	2.1
23.....	1.6	3.7	3.9	5.8	3.0	4.4	5.9	14.7	3.5	3.4	4.7	2.1
24.....	1.6	3.5	3.8	5.4	3.9	4.7	5.4	22.45	3.5	3.3	4.4	2.1
25.....	1.6	3.6	3.7	5.1	4.8	4.5	4.9	25.4	3.8	8.1	3.8	2.1
26.....	1.6	3.6	3.7	4.8	5.2	4.3	4.5	14.1	3.6	6.4	3.4	2.0
27.....	1.6	3.5	3.6	4.6	10.8	4.1	4.4	9.7	3.5	5.0	3.4	2.0
28.....	1.6	3.4	3.5	4.5	24.4	4.0	4.2	7.9	3.8	4.5	3.6	2.2
29.....	1.5	3.2	3.4	4.2	.....	3.8	4.0	6.6	4.9	4.0	3.3	2.3
30.....	1.5	3.0	3.3	4.0	.....	3.7	3.9	6.0	4.5	3.6	3.1	2.4
31.....	1.5	.....	3.2	3.8	.....	3.9	.....	5.6	.....	3.3	3.0	.....
Day.										Oct.	Nov.	Dec.
1910												
1.....										2.5	2.7	2.3
2.....										2.0	2.7	2.3
3.....										2.7	2.6	2.3
4.....										2.2	2.6	2.3
5.....										2.8	2.6	2.3
6.....										32.6	2.5	2.4
7.....										38.3	2.5	2.4
8.....										25.1	2.4	2.4
9.....										8.9	2.4	2.3
10.....										7.8	2.4	2.3
11.....										6.7	2.5	2.3
12.....										5.5	2.4	2.3
13.....										5.4	2.4	2.3
14.....										5.5	2.3	2.3
15.....										5.4	2.3	2.3
16.....										5.4	2.3	2.3
17.....										4.3	2.4	2.3
18.....										4.3	2.4	2.3
19.....										4.3	2.4	2.3
20.....										3.4	2.3	2.2
21.....										3.4	2.3	2.2
22.....										3.4	2.3	2.5
23.....										3.3	2.3	2.5
24.....										3.6	2.3	2.4
25.....										3.3	2.3	2.4
26.....										3.1	2.3	2.4
27.....										3.0	2.3	2.4
28.....										2.1	2.4	2.5
29.....										2.9	2.4	3.5
30.....										2.8	2.4	6.7
31.....										2.7	.....	7.8

CACHE RIVER AT PATTERSON, ARK.

LOCATION.—In sec. 6, T. 7 N., R. 2 W., at Missouri Pacific Railway bridge three-fourths of a mile west of Patterson, Woodruff County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—February 1 to September 30, 1928; gage-height record and discharge measurements only.

EQUIPMENT.—Gage is United States Weather Bureau vertical staff in two sections. Discharge measurements made from bridge at gage, from highway bridge 1,000 feet downstream, or by wading.

CHANNEL AND CONTROL.—Banks low, heavily wooded, subject to over flow. Bed composed of sand and silt; fairly permanent. No well-defined control.

EXTREMES OF STAGE.—Maximum stage recorded, 11.8 feet June 27-28; minimum stage, 3.6 feet September 30.

ACCURACY.—Gage read to tenths once daily. Data not sufficient for determination of discharge.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

DISCHARGE MEASUREMENTS OF CACHE RIVER AT PATTERSON, ARK., DURING THE YEAR ENDING SEPTEMBER 30, 1928

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1928			
March 10.....	H. C. Beckman.....	7.39	876
April 13.....	H. C. Beckman.....	9.62	4,160
May 1.....	V. L. Austin.....	9.30	3,710
June 20.....	V. L. Austin.....	11.08	9,110
August 10.....	A. L. Hill.....	4.86	199

DAILY GAGE HEIGHT, IN FEET, OF CACHE RIVER AT PATTERSON, ARK., FOR THE YEAR ENDING SEPTEMBER 30, 1928

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1928								
1.....	7.7	6.2	7.1	9.3	8.1	10.9	4.7	5.1
2.....	7.3	6.2	6.8	9.2	8.0	10.7	4.7	5.6
3.....	7.1	6.2	6.4	9.2	7.7	10.5	4.7	5.8
4.....	6.9	6.1	6.0	8.9	7.5	10.4	4.7	5.5
5.....	6.7	6.3	5.6	8.8	7.6	10.2	4.6	5.3
6.....	6.5	6.5	6.6	8.4	7.9	10.1	4.5	5.0
7.....	6.3	6.6	8.6	7.9	8.2	10.0	4.5	5.0
8.....	6.3	6.7	9.2	7.5	8.3	9.6	4.5	5.6
9.....	6.5	6.8	9.4	7.1	8.9	9.2	4.4	5.8
10.....	6.9	7.3	9.2	6.9	9.3	8.5	4.4	5.8
11.....	7.2	7.3	9.2	6.7	9.3	7.9	4.4	5.3
12.....	7.4	7.6	9.6	6.5	9.3	7.3	4.4	5.0
13.....	7.4	7.8	9.7	6.3	9.2	6.9	4.5	4.8
14.....	7.2	7.9	9.7	6.2	9.3	6.6	4.5	4.5
15.....	7.1	8.1	9.6	6.1	9.7	6.4	4.5	4.3
16.....	6.9	8.4	9.4	6.0	10.2	6.1	4.5	4.2
17.....	6.8	8.8	9.1	5.8	10.6	5.8	4.5	4.2
18.....	7.0	8.9	8.9	5.7	10.8	5.6	4.5	4.2
19.....	7.2	8.7	8.8	5.6	11.0	5.3	4.5	4.1
20.....	7.4	8.3	8.7	5.6	11.1	5.0	4.4	4.0
21.....	7.4	7.9	8.6	5.5	11.1	5.0	4.4	4.0
22.....	7.1	7.5	8.8	5.4	10.9	5.1	4.4	4.0
23.....	6.7	7.4	9.0	5.3	11.0	5.1	4.4	3.9
24.....	6.4	7.6	9.1	5.2	11.2	5.1	4.4	3.9
25.....	6.2	7.9	9.1	5.5	11.4	5.0	4.4	3.8
26.....	6.0	7.9	9.4	5.7	11.6	4.8	4.3	3.8
27.....	6.0	7.6	9.6	6.0	11.8	4.7	4.3	3.8
28.....	6.0	7.2	9.6	6.4	11.8	4.5	4.3	3.7
29.....	6.1	7.1	9.6	6.6	11.5	4.5	4.3	3.7
30.....	.....	7.1	9.4	7.4	11.2	4.6	4.3	3.6
31.....	.....	7.1	.....	8.0	.....	4.7	4.4	.....

ARKANSAS RIVER BASIN

ARKANSAS RIVER AT VAN BUREN ARK.

LOCATION.—In sec. 24, T. 9 N., R. 32 W., at highway bridge at Van Buren, Crawford County, and 1½ miles below Lee Creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 3, 1927, to September 30, 1928.

EQUIPMENT.—Chain gage on downstream handrail of bridge. Discharge measurements made from bridge.

CHANNEL AND CONTROL.—Banks fairly high but subject to overflow. Bed composed of sand and gravel; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 25.2 feet at 7 a. m. October 5, 1927 (discharge, 243,000 second-feet); minimum stage, 6.7 feet at 7 a. m. September 29, 1928 (discharge, 3,780 second-feet).

DIVERSIONS AND REGULATION.—Most of low-water flow in Colorado and Kansas diverted for irrigation.

ACCURACY.—One rating curve used; based on 9 discharge measurements well distributed over the range in stage for the period; rather poorly defined because of minor shifting of channel. Gage read to tenths twice daily to January 7; once daily thereafter. Because of the shifting character of the channel, daily discharge values may be considerably in error. Monthly records considered fair.

NOTE.—For miscellaneous gaging station and discharge data on the Arkansas River basin by the U. S. Army Engineers and Mississippi River Commission see pages 130-137.

DAILY DISCHARGE, IN SECOND-FEET, OF ARKANSAS RIVER AT VAN BUREN, ARK.,
FOR THE YEAR ENDING SEPTEMBER 30, 1928

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1927-28												
1.....		15,700	8,140	36,100	9,100	10,600	12,100	82,500	16,300	95,500	22,700	11,600
2.....		13,300	7,660	26,600	8,620	10,100	11,600	70,000	15,700	99,600	32,800	11,100
3.....	206,000	13,300	18,700	17,500	8,140	9,600	10,600	59,200	15,700	94,200	37,200	11,600
4.....	235,000	11,600	18,700	12,100	7,660	9,600	10,600	55,600	71,200	85,100	27,600	10,100
5.....	241,000	10,600	13,900	9,600	10,100	9,600	14,500	50,800	74,800	74,800	38,300	9,600
6.....	209,000	10,100	11,100	9,600	11,100	9,600	101,000	42,700	79,900	62,800	156,000	9,100
7.....	163,000	9,600	9,600	9,600	21,300	9,600	136,000	37,200	76,000	54,400	171,000	9,100
8.....	129,000	11,600	8,620	10,100	35,000	9,100	151,000	32,800	66,400	46,000	110,000	8,620
9.....	117,000	12,700	7,660	9,600	68,800	12,700	131,000	28,600	67,600	38,300	56,800	7,660
10.....	117,000	11,600	7,660	10,100	70,000	18,700	94,200	24,100	62,800	33,900	36,100	7,200
11.....	111,000	11,600	7,200	10,600	55,600	22,700	67,600	22,000	66,400	28,600	29,600	6,740
12.....	102,000	10,600	7,200	9,600	40,500	26,600	56,800	21,300	96,800	25,700	25,700	6,300
13.....	83,800	10,600	62,800	10,600	25,700	21,300	46,000	19,300	166,000	29,600	22,000	7,200
14.....	72,400	10,600	89,000	11,100	20,600	17,500	37,200	18,700	184,000	33,900	18,700	8,620
15.....	56,800	12,700	78,600	10,600	19,300	14,500	35,000	18,100	198,000	35,000	17,500	7,660
16.....	43,800	19,900	81,200	10,100	25,700	15,700	27,600	18,700	179,000	36,100	18,700	7,200
17.....	30,600	31,700	74,800	9,600	28,600	23,400	22,700	20,600	152,000	79,900	17,500	6,740
18.....	25,700	49,600	58,000	18,700	25,700	47,200	20,600	25,700	124,000	68,800	15,700	6,300
19.....	21,300	43,800	33,900	54,400	24,900	73,600	20,600	66,400	114,000	54,400	13,900	5,860
20.....	18,700	31,700	18,100	70,000	22,000	76,000	18,700	116,000	122,000	42,700	15,700	5,420
21.....	17,500	24,100	14,500	59,200	19,300	70,000	49,600	137,000	158,000	31,700	25,700	5,000
22.....	16,300	19,900	12,700	43,800	17,500	62,800	146,000	120,000	179,000	24,100	19,900	5,000
23.....	15,100	17,500	11,600	25,700	15,100	58,000	206,000	90,300	202,000	20,600	15,700	4,580
24.....	13,900	15,100	10,600	19,900	14,500	41,600	206,000	54,400	235,000	19,300	17,500	4,580
25.....	13,900	12,700	9,600	17,700	13,300	30,600	209,000	46,000	226,000	20,600	26,600	5,000
26.....	12,700	11,600	9,100	15,100	12,700	24,100	189,000	40,500	209,000	22,700	24,900	5,580
27.....	12,100	10,600	8,620	13,300	12,100	20,600	158,000	32,800	175,000	22,000	29,600	5,180
28.....	11,600	9,600	9,600	12,100	11,600	18,100	140,000	26,600	126,000	22,700	23,400	5,180
29.....	11,600	9,100	13,900	11,600	11,100	16,300	128,000	22,700	101,000	25,700	17,500	3,780
30.....	11,100	8,620	16,300	10,600	.....	15,100	107,000	20,600	91,600	22,700	14,500	4,180
31.....	11,100	.....	24,100	10,100	.....	13,900	.....	18,100	.....	22,700	12,700	.....

MONTHLY DISCHARGE OF ARKANSAS RIVER AT VAN BUREN, ARK., FOR THE
YEAR ENDING SEPTEMBER 30, 1928

Month.	Discharge in second-feet.		
	Maximum	Minimum.	Mean.
October, 3-31.....	241,000	11,100	73,400
November.....	49,600	8,620	16,400
December.....	89,000	7,200	24,600
January.....	70,000	9,600	19,500
February.....	70,000	7,660	23,000
March.....	76,000	9,100	26,400
April.....	209,000	10,600	85,500
May.....	137,000	18,100	46,400
June.....	235,000	15,700	122,000
July.....	99,600	19,300	44,300
August.....	171,000	12,700	35,900
September.....	11,600	3,780	6,960

ARKANSAS RIVER AT LITTLE ROCK, ARK.

LOCATION.—In sec. 3, T. 1 N., R. 12 W., at Main Street bridge in Little Rock, Pulaski County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 16, 1927, to September 30, 1928. United States Weather Bureau has obtained records of stage since 1873.

EQUIPMENT.—United States Weather Bureau Staff gage on concrete pier. Zero of gage is 223.39 feet above mean sea level. Discharge measurements made from bridge.

CHANNEL AND CONTROL.—Right bank high; left bank overflows at extremely high stages. Bankful stage is 25 feet. Channel straight for 4,000 feet above and below gage. Bed composed of sand; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 20.9 feet October 7, 1927 (discharge, 220,000 second-feet); minimum stage, 0.1 foot September 28-30 (discharge, 5,340 second-feet).

United States Weather Bureau records show floods of June, 1833, and April, 1927, reached stages of 34.6 feet and 33.0 feet, respectively.

DIVERSIONS AND REGULATIONS.—Most of low-water flow in Colorado and Kansas diverted for irrigation.

ACCURACY.—One rating curve based on 11 discharge measurements used October 2 to end of year; parallel curve based on one discharge measurement used previous to this. Curves rather poorly defined because of minor shifting of channel. Gage read to tenths once daily. Because of shifting character of channel daily discharge records may be considerably in error. Monthly records considered fair.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

NOTE.—For Mississippi River Commission and U. S. Army Engineer's gaging station data of the Arkansas River at Little Rock see pages 131-133.

DAILY DISCHARGE, IN SECOND-FEET, OF ARKANSAS RIVER AT LITTLE ROCK, ARK.,
FOR THE YEARS ENDING SEPTEMBER 30, 1927 AND 1928

Day.												Sept.
1927												
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												27,000
17												24,600
18												20,300
19												17,800
20												15,700
21												14,500
22												13,800
23												12,800
24												12,400
25												12,000
26												11,700
27												11,000
28												11,700
29												12,800
30												14,900
31												
Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1927-28												
1	19,800	14,900	16,500	31,800	21,300	18,800	21,300	131,000	25,200	110,000	24,600	25,200
2	80,000	15,300	15,300	35,400	19,300	17,800	19,800	114,000	22,900	95,900	27,000	21,300
3	114,000	15,300	14,900	50,200	18,300	17,000	18,800	92,600	20,800	81,000	24,000	19,800
4	159,000	17,400	14,500	47,500	17,400	16,500	17,000	76,000	19,300	92,600	24,600	15,300
5	190,000	18,300	13,800	37,600	17,400	15,700	18,300	65,000	19,300	89,300	32,500	14,900
6	218,000	17,000	18,800	27,700	16,100	16,100	42,400	60,300	56,500	77,000	35,400	14,500
7	220,000	17,000	24,000	22,400	17,000	16,100	143,000	55,600	74,000	72,000	50,200	13,500
8	202,000	16,500	21,300	20,800	20,800	16,100	167,000	48,400	78,000	61,200	128,000	12,800
9	171,000	16,100	19,800	20,300	30,400	16,500	171,000	42,400	77,000	52,900	132,000	11,700
10	145,000	14,900	18,800	21,300	44,100	17,400	175,000	38,400	70,000	45,800	99,200	11,700
11	126,000	14,900	17,000	21,800	71,000	18,800	152,000	33,900	70,000	40,000	68,000	11,400
12	120,000	17,000	16,500	20,800	78,000	22,400	130,000	30,400	69,000	34,600	45,800	11,000
13	115,000	17,000	15,700	19,300	71,000	29,000	108,000	25,800	69,000	31,100	35,400	9,960
14	108,000	15,300	79,000	19,300	58,400	34,600	94,800	24,600	139,000	29,700	29,000	8,940
15	94,800	16,100	194,000	18,800	47,500	35,400	83,000	17,800	190,000	30,400	25,800	8,600
16	84,000	19,800	151,000	18,800	38,400	31,100	71,000	17,000	192,000	32,500	23,400	8,260
17	71,000	26,400	122,000	18,800	32,500	29,000	64,100	24,600	180,000	33,900	20,300	9,620
18	64,100	29,700	110,000	19,300	31,800	27,000	54,700	27,700	167,000	36,100	18,800	9,280
19	41,600	31,800	101,000	31,800	39,200	27,700	45,800	28,400	151,000	59,400	19,800	8,940
20	35,400	52,000	87,100	58,400	39,200	45,800	38,400	29,700	130,000	71,000	20,300	8,940
21	31,100	58,400	70,000	88,200	38,400	76,000	37,600	77,000	119,000	60,300	19,800	7,920
22	25,800	50,200	50,200	97,000	34,600	81,000	53,800	119,000	131,000	49,300	17,400	7,260
23	22,900	39,200	36,100	88,200	31,100	78,000	140,000	126,000	162,000	39,200	17,400	6,930
24	19,800	32,500	28,400	73,000	28,400	71,000	182,000	108,000	184,000	31,800	25,200	6,600
25	19,800	28,400	25,200	59,400	25,200	64,100	207,000	86,000	202,000	25,800	26,400	5,960
26	19,800	25,200	21,800	47,500	24,000	56,500	211,000	66,000	213,000	22,400	38,400	5,960
27	19,800	21,800	20,300	39,200	21,800	46,600	200,000	53,800	213,000	22,900	33,200	5,650
28	18,800	20,300	19,800	33,900	21,300	38,400	180,000	46,600	194,000	22,900	31,800	5,340
29	17,000	18,800	19,300	27,700	20,300	31,800	160,000	40,000	167,000	24,600	30,400	5,340
30	15,300	17,400	24,600	24,600	.....	27,700	146,000	33,900	136,000	24,000	31,100	5,340
31	15,300	.....	33,200	22,400	.....	24,000	.....	28,400	.....	24,600	28,400	.....

MONTHLY DISCHARGE OF ARKANSAS RIVER AT LITTLE ROCK, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1927 AND 1928

Month	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.
1927			
September 16-30.....	27,000	11,000	15,500
1927-28			
October.....	220,000	15,300	84,000
November.....	58,400	14,900	23,800
December.....	194,000	13,800	45,800
January.....	97,000	18,800	37,500
February.....	78,000	16,100	33,600
March.....	81,000	15,700	34,300
April.....	211,000	17,000	105,000
May.....	131,000	17,000	57,000
June.....	213,000	19,300	118,000
July.....	110,000	22,400	49,200
August.....	132,000	17,400	38,200
September.....	25,200	5,340	10,600
The year.....	220,000	5,340	53,100

OUACHITA RIVER BASIN

OUACHITA RIVER NEAR HOT SPRINGS, ARK.

LOCATION.—In SW. $\frac{1}{4}$ sec. 29, T. 3 S., R. 19 W., at Smith Ferry highway bridge, 1 mile upstream from Hot Springs Creek, and 5 miles south of Hot Springs, Garland County.

DRAINAGE AREA.—1,420 square miles (measured on base map of Arkansas).

RECORDS AVAILABLE.—June 27, 1922, to September 30, 1928.

EQUIPMENT.—Chain gage on bridge. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and rock; practically permanent. Channel is obstructed by outcropping rock dikes on which small trees grow. Control is a series of rock dikes 400, 1,000, and 1,500 feet below gage; the upper dike forms the low-water control, and lower dike the high-water control; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage, determined by levels to flood-marks, 43.9 feet May 15, 1923 (discharge, determined by extending rating curve for main channel and computing overflow by Kutter's formula, 143,000 second-feet); minimum discharge, somewhat less than 40 second-feet during later part of September, 1928.

ACCURACY.—Stage-discharge relation not permanent. Several rating curves used. Gage read to hundredths twice daily. Records fair to good except for extreme stages, which may be considerably in error.

COOPERATION.—Arkansas Power & Light Company, H. C. Couch, President.

NOTE.—For miscellaneous gaging station and discharge data of the Ouachita River basin see page 106.

DAILY DISCHARGE, IN SECOND-FEET, OF OUACHITA RIVER NEAR HOT SPRINGS,
ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1922-1928

Day.	June.	July.	Aug.	Sept.
1922				
1.....		265	178	44
2.....		275	157	44
3.....		363	157	44
4.....		310	150	44
5.....		275	150	44
6.....		201	138	44
7.....		178	157	43
8.....		154	327	44
9.....		147	233	42
10.....		104	178	42
11.....		80	164	42
12.....		54	147	42
13.....		135	126	42
14.....		275	115	42
15.....		217	89	42
16.....		193	72	42
17.....		193	89	43
18.....		157	94	42
19.....		138	89	42
20.....		147	82	45
21.....		132	82	44
22.....		104	80	45
23.....		92	77	48
24.....		84	75	48
25.....		84	72	50
26.....		115	70	47
27.....	168	99	66	45
28.....	315	94	62	44
29.....	345	94	54	44
30.....	285	89	48	42
31.....		84	43	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1922-23												
1.....	54	78	163	2,800	22,500	4,580	622	4,170	1,520	655	545	44
2.....	54	130	163	2,140	21,900	3,390	765	3,780	2,470	200	900	48
3.....	54	82	171	1,340	45,600	3,030	3,150	3,030	2,250	187	858	46
4.....	54	72	195	998	20,300	2,360	6,880	2,140	3,780	182	775	44
5.....	54	71	290	955	7,440	2,690	9,110	1,820	4,040	178	695	858
6.....	54	69	392	860	6,520	21,200	2,580	1,920	14,800	151	695	695
7.....	105	59	440	675	4,170	24,400	2,140	1,720	15,600	122	545	735
8.....	85	54	568	517	2,030	14,800	3,520	1,430	4,170	116	205	655
9.....	95	61	860	412	2,690	5,190	3,150	1,190	2,360	105	114	408
10.....	195	69	675	348	3,390	3,390	2,140	998	8,240	101	261	270
11.....	203	75	675	312	4,580	3,030	2,250	500	12,600	101	218	162
12.....	137	101	622	342	3,030	2,920	2,470	360	9,260	105	155	178
13.....	125	275	585	290	3,150	2,860	2,690	622	5,920	139	116	326
14.....	163	412	517	306	2,360	2,580	2,360	6,520	2,580	187	105	174
15.....	125	765	425	290	2,580	4,730	2,140	125,000	2,140	214	101	133
16.....	82	1,140	360	373	2,140	27,700	1,920	37,000	1,920	232	59	127
17.....	95	1,090	348	386	1,920	18,000	1,520	8,890	1,520	285	98	985
18.....	93	765	260	348	2,470	5,670	1,430	8,030	1,340	354	300	1,340
19.....	82	399	241	440	955	4,300	1,280	7,630	1,160	408	300	2,910
20.....	71	718	260	399	1,280	3,150	1,090	6,000	858	408	223	2,580
21.....	95	500	212	9,800	1,190	2,800	1,050	2,690	695	366	119	6,880
22.....	71	622	203	11,400	998	2,030	1,340	2,690	618	343	74	2,800
23.....	69	386	171	5,030	955	2,140	2,690	3,520	510	320	56	1,620
24.....	89	336	171	3,390	808	1,820	4,580	8,450	475	280	62	1,170
25.....	78	290	167	2,910	902	1,620	8,030	7,250	440	232	56	890
26.....	78	250	163	2,910	23,700	1,280	6,520	9,340	440	205	76	738
27.....	74	203	373	2,910	12,600	998	5,030	5,510	377	178	66	590
28.....	78	163	860	5,670	7,440	902	8,450	3,390	343	139	59	490
29.....	74	133	1,050	6,700	.....	902	8,890	2,580	310	162	58	372
30.....	78	163	765	34,000	.....	955	4,580	2,180	251	320	54	362
31.....	78	.....	2,470	18,000	.....	860	.....	1,720	.....	275	49	.....

DAILY DISCHARGE, IN SECOND-FEET, OF OUACHITA RIVER NEAR HOT SPRINGS, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1922-1928—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1923-24												
1.....	320	1,170	1,350	1,260	1,820	970	1,530	12,800	625	555	80	66
2.....	291	1,090	1,440	1,170	1,620	850	1,260	4,580	522	246	82	890
3.....	263	930	1,530	1,010	1,440	812	1,170	2,910	459	170	70	428
4.....	246	1,720	2,250	930	1,440	775	1,440	2,250	400	140	65	282
5.....	237	3,780	2,690	850	1,260	738	1,350	1,720	351	124	62	216
6.....	277	2,030	2,140	775	1,090	700	1,350	1,440	310	116	60	192
7.....	228	1,440	1,530	700	1,010	625	1,170	1,170	286	114	152	184
8.....	208	1,170	1,440	662	930	625	1,090	1,010	268	111	73	146
9.....	192	930	5,190	625	850	700	1,090	850	254	106	62	116
10.....	181	775	10,700	590	775	738	1,920	738	263	111	59	101
11.....	166	700	9,800	590	812	662	1,920	625	400	174	62	92
12.....	156	555	11,900	700	890	662	1,720	555	1,260	140	121	96
13.....	152	490	23,400	775	890	700	1,440	522	930	133	88	98
14.....	166	459	17,800	700	890	890	1,170	490	590	133	68	101
15.....	181	428	7,630	775	890	1,720	1,090	459	428	181	68	101
16.....	192	400	4,580	2,580	890	2,250	970	428	336	149	86	96
17.....	204	362	3,270	2,910	970	2,800	890	400	277	127	181	101
18.....	192	341	2,580	2,580	1,010	3,030	775	372	246	116	127	127
19.....	174	310	2,250	2,140	1,440	2,800	700	330	212	106	106	166
20.....	166	291	2,030	1,820	2,250	4,440	625	301	188	106	101	351
21.....	159	272	2,360	1,530	2,140	6,170	590	282	196	106	92	372
22.....	156	272	5,830	1,350	1,920	4,880	522	263	216	104	80	212
23.....	152	282	12,300	1,170	1,820	3,910	490	251	212	96	78	152
24.....	146	296	6,520	1,820	1,720	3,150	459	625	181	90	111	133
25.....	146	301	4,170	3,650	1,530	2,580	459	428	146	121	121	121
26.....	146	400	3,030	3,910	1,440	2,140	662	555	130	101	106	116
27.....	146	555	2,360	2,910	1,260	1,920	2,690	1,440	118	98	88	111
28.....	146	700	2,140	2,470	1,170	1,620	3,150	1,440	106	84	76	625
29.....	146	1,010	1,920	2,470	1,010	2,250	2,580	1,440	286	76	73	372
30.....	200	1,170	1,620	2,360	.....	2,140	18,000	970	459	76	71	315
31.....	1,010	.....	1,440	2,140	.....	1,820	.....	738	.....	78	68	...
1924-25												
1.....	228	71	116	208	459	1,440	159	1,620	86	428	625	76
2.....	228	63	108	188	662	1,170	152	490	86	428	428	76
3.....	181	68	108	188	662	1,010	208	700	80	625	296	76
4.....	146	71	136	188	662	890	700	625	73	700	146	76
5.....	130	71	208	170	662	812	459	346	68	296	136	76
6.....	121	70	263	170	625	700	372	320	68	220	121	68
7.....	118	78	2,690	170	555	625	330	346	68	208	136	68
8.....	114	78	4,040	170	522	590	282	263	92	220	136	68
9.....	101	78	1,720	159	700	490	272	228	86	188	127	63
10.....	108	78	1,170	170	850	428	250	208	76	188	127	60
11.....	90	78	890	237	1,010	400	228	2,470	76	181	121	60
12.....	80	310	700	346	930	372	220	1,920	96	146	121	63
13.....	80	277	555	372	775	341	196	1,820	208	136	108	58
14.....	74	459	490	428	700	320	188	1,620	196	127	108	68
15.....	74	625	400	625	625	306	181	1,010	170	121	108	80
16.....	71	428	362	700	522	291	170	428	159	101	96	76
17.....	71	310	320	1,010	459	282	170	320	282	96	96	152
18.....	71	254	296	1,350	428	259	170	282	362	96	96	272
19.....	71	220	296	1,530	400	259	208	263	490	296	96	263
20.....	71	246	282	1,530	372	246	196	250	459	346	96	237
21.....	71	204	263	1,440	1,920	237	188	170	372	320	96	152
22.....	68	181	250	1,350	3,150	237	159	127	346	590	96	136
23.....	63	170	250	1,170	13,100	216	152	108	296	930	96	76
24.....	59	152	296	1,010	8,030	216	188	121	272	890	96	296
25.....	63	146	296	850	4,170	216	181	136	250	738	86	2,030
26.....	59	136	272	775	2,800	196	96	127	250	555	86	3,780
27.....	59	127	228	700	2,030	196	170	121	237	428	86	5,830
28.....	63	121	228	625	1,620	196	188	108	228	625	86	2,360
29.....	63	121	228	555	.....	177	2,250	96	181	662	86	1,440
30.....	68	116	220	490	.....	177	2,360	96	181	700	76	1,010
31.....	71	.....	208	490	.....	177	.....	106	.....	625	76	.....

DAILY DISCHARGE, IN SECOND-FEET, OF OUACHITA RIVER NEAR HOT SPRINGS, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1922-1928—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1925-26												
1.....	812	400	1,090	400	1,530	2,140	10,000	1,010	338	130	111	111
2.....	662	372	1,010	400	1,350	1,920	5,510	930	315	124	98	103
3.....	459	372	890	625	1,170	1,620	4,040	1,010	440	111	111	103
4.....	372	2,360	890	812	1,090	1,170	3,030	1,010	498	111	98	119
5.....	346	5,030	850	1,090	1,010	1,010	2,470	930	440	111	98	124
6.....	310	5,510	775	1,170	930	1,170	2,030	890	386	98	98	138
7.....	237	16,100	700	1,010	850	1,440	6,170	775	362	98	98	152
8.....	310	16,400	662	890	850	1,350	6,170	1,920	362	119	80	152
9.....	1,090	10,300	625	775	775	1,170	4,300	7,830	315	103	76	130
10.....	930	4,730	555	700	700	1,440	3,030	4,730	258	130	67	103
11.....	775	3,150	522	662	665	3,780	2,580	3,520	221	152	67	87
12.....	1,440	2,580	490	625	630	3,780	2,360	3,780	198	138	58	76
13.....	6,340	2,030	522	590	630	2,800	2,030	2,690	182	111	58	67
14.....	4,300	1,620	2,140	555	595	2,250	1,720	2,250	167	98	62	72
15.....	3,390	1,350	3,520	522	560	1,920	1,530	1,820	152	98	67	76
16.....	16,100	1,170	2,690	522	529	1,720	1,350	1,260	138	98	67	76
17.....	29,400	1,010	2,250	1,090	595	1,440	1,170	1,090	124	103	80	72
18.....	13,100	850	1,820	2,030	2,140	1,350	1,090	1,010	167	124	94	67
19.....	4,580	1,440	1,530	2,470	2,580	1,260	1,010	850	890	111	98	67
20.....	2,910	1,530	1,350	2,360	2,360	1,170	930	775	292	111	103	62
21.....	2,140	1,350	1,170	38,500	2,030	1,260	850	700	208	98	111	58
22.....	1,620	1,170	1,010	38,500	1,720	3,390	2,140	630	188	98	119	67
23.....	1,350	1,010	850	15,000	1,530	5,180	2,580	560	176	98	146	67
24.....	1,170	890	775	6,880	1,260	3,390	4,300	498	158	413	176	80
25.....	970	812	700	4,440	3,910	3,520	3,270	440	152	338	152	232
26.....	812	1,090	625	3,270	1,440	4,580	2,360	386	152	315	167	1,820
27.....	662	2,250	590	2,580	2,690	3,390	1,820	362	440	258	198	1,170
28.....	555	1,820	522	2,360	2,360	2,800	1,530	338	362	198	198	529
29.....	490	1,350	490	2,030	.....	2,470	1,350	338	221	176	152	362
30.....	428	1,260	459	1,720	.....	8,030	1,170	315	152	130	146	271
31.....	428	.....	428	1,720	.....	20,000	.....	338	.....	124	119	.....
1926-27												
1.....	250	2,470	738	1,170	2,250	700	2,800	1,170	3,270	529	211	292
2.....	214	1,530	665	2,470	1,920	1,170	2,580	970	18,000	469	195	267
3.....	182	1,170	630	2,250	1,620	1,720	2,360	850	5,030	440	179	243
4.....	182	970	595	1,920	1,260	1,530	2,360	930	2,250	386	164	218
5.....	214	738	560	1,820	1,090	1,440	10,700	850	1,720	362	288	201
6.....	292	595	560	1,440	4,440	1,350	5,180	930	23,100	338	243	185
7.....	292	560	529	1,260	5,510	20,000	3,520	775	5,830	315	284	170
8.....	232	498	738	1,170	4,580	19,400	2,470	738	3,520	271	263	158
9.....	214	498	1,260	1,170	3,910	12,100	20,000	775	2,580	243	246	144
10.....	338	498	2,690	1,090	3,520	5,180	6,170	1,170	1,820	214	440	135
11.....	560	440	3,650	930	3,390	6,340	3,390	1,530	1,090	185	1090	127
12.....	1,440	413	2,470	775	3,270	8,030	3,270	1,720	850	170	700	119
13.....	1,260	362	1,920	700	2,800	6,340	9,570	1,260	700	149	386	108
14.....	890	775	1,620	630	2,470	4,580	50,100	1,090	700	135	315	101
15.....	890	4,170	1,260	630	2,140	3,390	72,800	700	4,440	130	275	94
16.....	738	4,040	1,090	560	1,920	3,150	42,800	560	3,910	127	246	89
17.....	529	2,800	930	498	1,720	2,800	12,300	498	2,800	119	228	85
18.....	498	1,530	850	469	1,620	11,600	6,700	440	1,920	146	211	80
19.....	440	1,720	775	775	1,530	19,200	6,700	560	1,350	176	195	91
20.....	338	1,350	1,720	8,450	1,350	12,800	36,600	1,440	1,350	228	179	85
21.....	292	1,170	75,900	5,830	1,260	6,880	115,000	4,040	10,000	338	164	80
22.....	250	1,010	42,400	12,600	1,170	4,730	56,400	21,900	6,520	362	141	76
23.....	271	930	16,100	30,800	1,090	3,390	12,100	12,100	4,300	1,620	124	72
24.....	850	850	13,500	28,300	970	2,800	6,000	6,520	2,690	1,090	108	72
25.....	1,010	775	8,240	22,800	850	2,360	4,040	7,060	1,720	2,140	96	72
26.....	1,090	775	5,350	17,500	812	2,030	3,150	3,910	1,260	2,360	89	76
27.....	890	775	4,880	13,300	700	1,820	2,470	2,910	930	1,620	83	80
28.....	738	775	6,000	7,630	700	1,720	2,030	2,470	850	812	108	94
29.....	775	850	6,170	4,730	.....	2,140	1,720	1,720	700	362	665	284
30.....	7,830	850	4,170	3,910	.....	2,580	1,440	1,010	595	284	930	201
31.....	3,520	.....	3,780	2,910	.....	2,360	.....	1,720	.....	236	440	.....

DAILY DISCHARGE, IN SECOND-FEET, OF OUACHITA RIVER NEAR HOT SPRINGS, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1922-1928—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1927-28												
1.....	198	96	315	890	560	665	440	1,350	271	630	1,720	292
2.....	232	595	275	775	529	595	440	1,170	284	529	1,260	498
3.....	850	1,720	254	700	529	560	413	1,090	440	440	970	440
4.....	775	1,260	221	630	498	560	469	930	1,720	386	775	292
5.....	700	930	176	560	560	630	1,260	890	4,040	338	630	250
6.....	665	529	135	560	665	630	51,400	812	1,620	284	890	176
7.....	2,470	440	176	812	812	630	31,100	775	1,440	263	890	119
8.....	1,170	413	135	2,580	812	630	6,170	738	1,170	232	630	87
9.....	850	560	98	2,580	700	2,140	4,300	630	1,090	221	529	67
10.....	812	413	80	2,360	665	1,920	3,150	560	1,260	214	469	94
11.....	738	292	498	1,820	630	1,530	2,470	498	1,920	192	386	198
12.....	595	413	4,300	1,530	1,260	1,440	2,030	469	2,690	195	315	198
13.....	338	338	4,880	1,260	1,170	1,260	1,720	440	4,440	292	284	98
14.....	288	315	6,880	1,010	1,090	1,090	2,140	440	7,060	232	243	76
15.....	258	8,890	6,000	970	1,010	1,260	2,030	469	6,880	263	221	72
16.....	221	6,170	4,040	930	970	1,720	1,920	498	3,390	362	214	72
17.....	195	3,270	2,580	850	850	1,920	1,440	665	2,470	1,260	188	67
18.....	176	2,140	1,530	775	775	2,030	1,260	1,010	1,820	3,650	176	65
19.....	164	1,440	1,620	1,350	738	1,620	1,170	970	1,350	1,920	498	63
20.....	155	1,090	1,350	3,270	738	1,440	1,090	1,530	1,090	1,090	338	62
21.....	146	1,010	1,090	2,800	738	1,260	10,000	1,920	4,040	812	236	58
22.....	135	930	970	2,030	775	1,090	30,100	1,720	3,650	630	258	
23.....	130	850	890	1,720	970	970	22,200	1,260	5,510	775	630	
24.....	124	738	738	1,620	970	930	7,630	930	6,340	812	338	
25.....	119	630	630	1,440	930	850	4,440	738	2,800	1,530	292	
26.....	114	560	560	1,170	850	775	3,150	595	1,820	2,030	630	
27.....	103	498	529	1,090	775	700	2,580	498	1,350	1,530	440	
28.....	94	440	1,170	1,010	738	630	2,140	440	1,090	2,250	469	
29.....	89	413	1,440	890	700	595	1,920	386	930	2,360	560	
30.....	76	386	1,260	775	.....	560	1,530	338	775	3,520	440	
31.....	83	.....	1,090	665	.....	498	.....	292	.....	2,690	386	

NOTE.—Discharge estimated or interpolated August 22-25, September 1-30, October 1-5, December 25, 1922; March 12, May 30, June 11, 12, 1923; September 22-30, 1928; gage not read or readings unreliable.

MONTHLY DISCHARGE OF OUACHITA RIVER NEAR HOT SPRINGS, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1922-1928

(Drainage area, 1,420 square miles.)

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1922					
July.....	363	54	159	0.112	0.13
August.....	327	43	117	.082	.09
September.....	50	42	43.9	.031	.03
1922-23					
October.....	203	54	91.7	0.065	0.07
November.....	1,140	54	318	.224	.25
December.....	2,470	163	478	.337	.39
January.....	34,000	290	3,780	2.66	3.07
February.....	45,600	808	7,490	5.27	5.49
March.....	27,700	860	5,690	4.01	4.62
April.....	9,110	622	3,480	2.45	2.73
May.....	125,000	360	8,780	6.18	7.12
June.....	15,600	251	3,430	2.42	2.70
July.....	655	101	234	.165	.19
August.....	900	49	258	.182	.21
September.....	6,880	44	953	.671	.75
The year.....	125,000	44	2,890	2.04	27.59
1923-24					
October.....	1,010	146	218	.154	.18
November.....	3,780	272	821	.578	.64
December.....	23,400	1,350	5,140	3.62	4.17
January.....	3,910	590	1,610	1.13	1.30
February.....	2,250	775	1,280	.901	.97
March.....	6,170	625	1,940	1.37	1.58
April.....	18,000	459	1,810	1.27	1.42
May.....	12,800	254	1,370	.965	1.11
June.....	1,260	106	355	.250	.28
July.....	555	76	135	.095	.11
August.....	181	59	88.3	.062	.07
September.....	890	66	216	.152	.17
The year.....	23,400	59	1,260	.887	12.00
1924-25					
October.....	228	59	54.7	0.067	0.08
November.....	625	63	180	.127	.14
December.....	4,040	108	577	.406	.47
January.....	1,530	159	625	.440	.51
February.....	13,100	372	1,760	1.24	1.29
March.....	1,440	177	435	.306	.35
April.....	2,360	96	368	.259	.29
May.....	2,470	96	543	.382	.44
June.....	490	68	196	.138	.15
July.....	930	96	394	.277	.32
August.....	625	76	138	.097	.11
September.....	5,830	58	638	.449	.50
The year.....	13,100	58	487	.343	4.65

MONTHLY DISCHARGE OF OUACHITA RIVER NEAR HOT SPRINGS, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1922-1928—*Continued*

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1925-26					
October.....	29,400	237	3,180	2.24	2.58
November.....	16,400	372	3,040	2.14	2.39
December.....	3,520	428	1,050	.739	.85
January.....	38,500	400	4,400	3.10	3.57
February.....	3,910	529	1,370	.965	1.00
March.....	20,000	1,010	3,030	2.13	2.46
April.....	10,000	850	2,800	1.97	2.20
May.....	7,830	315	1,450	1.02	1.18
June.....	890	124	282	.199	.22
July.....	413	98	146	.103	.12
August.....	198	58	109	.077	.09
September.....	1,820	58	220	.155	.17
The year.....	38,500	58	1,760	1.24	16.83
1926-27					
October.....	7,830	182	887	0.625	0.72
November.....	4,170	362	1,200	.845	.94
December.....	75,900	529	6,830	4.81	5.54
January.....	30,800	469	5,820	4.10	4.73
February.....	5,510	700	2,140	1.51	1.57
March.....	20,000	700	5,670	3.99	4.60
April.....	115,000	1,440	16,900	11.90	13.28
May.....	21,900	440	2,720	1.92	2.21
June.....	23,100	595	3,860	2.72	3.04
July.....	2,360	119	528	.372	.43
August.....	1,090	83	300	.211	.24
September.....	292	72	137	.096	.11
The year.....	115,000	72	3,910	2.75	37.41
1927-28					
October.....	2,470	76	421	.296	.34
November.....	8,890	96	1,260	.887	.99
December.....	6,880	80	1,480	1.04	1.20
January.....	3,270	560	1,340	.944	1.09
February.....	1,260	498	793	.558	.60
March.....	2,140	498	1,070	.754	.87
April.....	51,400	413	6,740	4.75	5.30
May.....	1,920	292	808	.569	.66
June.....	7,060	271	2,490	1.75	1.95
July.....	3,650	192	1,030	.725	.84
August.....	1,720	176	526	.370	.43
September.....	498	.....	123	.087	.10
The year.....	51,400	.....	1,500	1.06	14.37

OUACHITA RIVER AT REMMEL DAM, NEAR MALVERN, ARK.

LOCATION.—In SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 36, T. 3 S., R. 18 W., 1,700 feet below Remmel Dam of Arkansas Power & Light Company, three-fourths of a mile above Cove Creek, and 9 miles northwest of Malvern, Hot Spring County.

DRAINAGE AREA.—1,540 square miles (measured on base map of Arkansas).

RECORDS AVAILABLE.—January 30, 1925, to April 8, 1927.

EQUIPMENT.—Gurley 7-day water-stage recorder in concrete house and well. Discharge measurements made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of clean gravel. Control is coarse gravel bar 1,000 feet below gage; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage, from water-stage recorder, 30.7 feet at 2 p. m. December 21, 1926 (discharge from extension of rating curve, 97,400 second-feet); minimum stage, 1.52 feet September 12 and 13, 1925, while power plant was shut down (discharge, 15 second-feet).

Flood of May 16, 1923, reached a stage of 36.3 feet, as determined by levels to flood marks (discharge from extension of rating curve, 113,000 second-feet).

DIVERSIONS AND REGULATION.—Flow is regulated almost completely by power plant 1,700 feet above gage.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined between 200 and 70,000 second-feet; extended above. Operation of water-stage recorder satisfactory except for days when no records are given and for days when discharge was computed from power-plant records. Discharge to September 30, 1925, ascertained by averaging results obtained by applying hourly gage heights to rating table; after that date, by use of discharge integrator except as stated in foot note to daily-discharge table. Records good for discharges between 200 and 70,000 second-feet; others fair.

COOPERATION.—Arkansas Power & Light Company, H. C. Couch, President.

DAILY DISCHARGE, IN SECOND-FEET, OF OUACHITA RIVER AT REMMEL DAM,
NEAR MALVERN, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1925-27

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1925												
1.....					180	1,350			54	152		228
2.....					1,220	2,060			120	221		134
3.....					921	1,950			75	122		130
4.....					919	1,610			53	85		153
5.....					998	1,520			324	168		155
6.....					1,160	1,600			200	148		104
7.....					1,120	1,580			129	150		137
8.....					38	860		400	84	152		120
9.....					597	1,720		418	147	133	94	172
10.....					986	1,090		180	199	110	115	110
11.....						596		1,040	310	155	128	164
12.....						634		1,150	100	185	142	156
13.....						695		1,310	76	180	206	165
14.....						562		1,330	172	141	136	240
15.....					134	184		1,400	166	340	147	248
16.....					806	710		1,510	115	132	136	1,090
17.....					658	662		811	144	130	228	1,270
18.....					548	482		1,240	180	214	321	130
19.....					770	536		933	150	174	422	107
20.....					508	496		228	149	120	124	126
21.....					1,140	336		192	282	120	176	204
22.....						90		140	163		155	116
23.....						259		104	129		133	257
24.....					9,410	301		86	150		118	220
25.....					4,480	304		352	150		132	288
26.....					3,670	326		402	171		240	864
27.....					2,320	350		178	153		127	1,520
28.....					2,550	359		182	151		113	2,050
29.....						100		173	98		139	2,480
30.....				1,310		202		162	127		82	2,170
31.....				888		88		114			98	
1925-26												
1.....	1,110	146	2,130	1,060	2,300	3,040	11,500	1,690	222	186	184	108
2.....	674	488	1,630	1,450	2,190	2,740	6,820	1,450	337	194	320	126
3.....	235	1,100	1,810	283	1,250	2,560	5,230	1,750	318	71	632	130
4.....	190	2,030	1,530	1,280	1,500	2,580	3,550	1,260	236	163	722	110
5.....	677	3,720	1,610	1,280	672	2,500	3,300	1,280	266	112	112	206
6.....	286	7,290	9,300	1,100	1,510	3,020	2,950	1,340	240	252	112	109
7.....	318	6,500	979	1,220	866	674	7,790	1,460	434	265	139	118
8.....	916	17,200	1,220	1,150	1,020	642	8,250	2,130	457	147	122	94
9.....	1,100	11,300	872	1,010	1,060	805	5,360	4,370	239	171	116	84
10.....	935	5,390	502	168	1,090	1,940	4,300	6,140	244	100	98	100
11.....	300	4,350	675	960	740	2,540	3,140	4,300	203	110	105	114
12.....	1,050	2,700	792	900	1,110	4,390	3,660	4,930	184	148	116	134
13.....	5,680	2,180	766	810	1,550	4,810	2,630	3,360	150	126	90	107
14.....	4,500	2,380	1,740	784	590	2,050	2,390	3,060	330	132	103	117
15.....	4,340	1,240	2,970	872	618	2,960	2,330	2,960	155	150	138	108
16.....	19,600	2,070	2,990	856	571	2,520	2,000	1,040	154	170	118	96
17.....	30,000	1,680	2,980	1,380	1,020	2,420	1,920	1,240	178	178	110	92
18.....	18,800	1,410	2,990	1,720	1,520	2,380	1,160	1,270	198	116	108	84
19.....	3,510	1,150	2,630	1,930	2,160	2,070	1,560	1,160	608	246	90	124
20.....	3,780	1,110	2,140	2,530	2,640	1,760	820	1,180	970	246	127	83
21.....	2,760	1,610	2,400	33,000	1,690	978	800	1,250	140	128	110	83
22.....	2,610	1,480	960	42,000	1,950	2,390	1,750	1,150	123	115	122	96
23.....	2,380	1,560	678	17,600	2,440	7,400	2,910	222	109	104	102	78
24.....	2,560	1,500	704	8,700	2,470	4,640	4,740	812	97	125	92	63
25.....	1,240	1,840	580	5,500	2,640	5,300	4,910	714	165	149	96	74
26.....	1,480	1,200	244	4,230	3,480	6,350	2,780	749	122	127	100	80
27.....	874	1,790	266	2,840	3,890	5,030	1,800	670	101	141	106	74
28.....	721	2,250	657	2,750	2,490	3,920	2,810	605	144	132	106	100
29.....	242	1,260	573	2,690		3,340	2,410	256	135	142	116	140
30.....	745	2,060	606	2,650		10,800	1,450	143	131	119	106	142
31.....	619		665	1,740		21,900		251		270	100	

DAILY DISCHARGE, IN SECOND-FEET, OF OUACHITA RIVER AT REMMEL DAM,
NEAR MALVERN, ARK., FOR THE YEARS ENDING SEPT. 30, 1925-27—*Continued*

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1926-27							
1.....	180	2,650	802	3,880	3,070	1,160	3,830
2.....	94	2,670	659	3,290	2,600	884	3,150
3.....	102	2,530	656	2,670	2,550	1,400	3,020
4.....	92	1,000	381	2,620	2,510	1,120	3,200
5.....	88	644	647	2,550	2,540	940	9,480
6.....	84	318	374	2,240	4,270	2,140	4,790
7.....	80	676	476	1,680	8,740	17,300	3,280
8.....	106	724	972	1,980	6,260	23,500	3,840
9.....	112	1,180	1,190	1,690	4,230	11,200	.....
10.....	208	982	1,310	1,550	2,890	6,170	.....
11.....	115	458	2,570	1,250	3,850	5,410	.....
12.....	522	484	2,400	500	4,030	8,340	.....
13.....	866	257	2,750	1,850	2,710	8,780	.....
14.....	880	1,550	2,880	1,040	3,370	4,460	.....
15.....	554	2,740	1,430	763	2,740	4,080	.....
16.....	396	2,880	1,200	1,030	2,660	3,620	.....
17.....	429	2,790	1,070	850	2,620	3,010	.....
18.....	256	2,820	826	638	1,820	11,900	.....
19.....	526	2,480	1,350	970	1,740	20,400	.....
20.....	591	2,550	1,250	4,710	841	12,500	.....
21.....	588	1,810	70,700	8,180	1,610	7,640	.....
22.....	606	1,250	55,400	11,000	1,320	5,780	.....
23.....	286	1,030	20,500	31,000	1,320	4,120	.....
24.....	328	833	12,000	29,300	1,730	3,750	.....
25.....	454	664	7,480	24,600	2,380	3,300	.....
26.....	528	1,040	6,460	20,500	2,480	3,220	.....
27.....	102	650	6,540	13,000	608	3,160	.....
28.....	132	1,720	7,030	8,340	1,900	3,800	.....
29.....	964	196	7,480	6,140	.....	3,200	.....
30.....	3,890	646	7,100	5,370	.....	3,310	.....
31.....	3,730	.....	3,650	3,080	.....	3,220	.....

NOTE.—Operation of water-stage recorder not satisfactory for days of missing records and for the following days when discharges were computed from power-plant records: October 10-15, November 7, 8, December 6-11, 1925; February 13-20, 25, 26, March 8-11, April 15-17, 1926.

OUACHITA RIVER BASIN

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MONTHLY DISCHARGE OF OUACHITA RIVER AT REMMEL DAM, NEAR MALVERN, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1925-1927

(Drainage area, 1,540 square miles.)

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1925					
March.....	2,060	88	762	0.495	0.57
May 8-31.....	1,510	86	585	.380	.34
June.....	324	53	151	.098	.11
July 1-21.....	340	85	159	.103	.08
August 9-31.....	422	82	161	.105	.09
September.....	2,480	104	510	.331	.37
1925-26					
October.....	30,000	190	3,680	2.39	2.76
November.....	17,200	146	3,400	2.21	2.47
December.....	9,300	244	1,630	1.06	1.22
January.....	42,000	168	4,720	3.07	3.54
February.....	3,890	571	1,680	1.09	1.14
March.....	21,900	642	3,890	2.53	2.92
April.....	11,500	800	3,570	2.32	2.59
May.....	6,140	143	1,750	1.14	1.31
June.....	970	97	246	.160	.18
July.....	270	71	156	.101	.12
August.....	722	90	156	.101	.12
September.....	206	63	106	.069	.08
The year.....	42,000	63	2,090	1.36	18.45
1926-27					
October.....	3,890	80	577	.375	.43
November.....	2,880	196	1,410	.916	1.02
December.....	70,700	374	7,400	4.80	5.53
January.....	31,000	638	6,400	4.16	4.80
February.....	8,740	608	2,840	1.84	1.92
March.....	23,500	884	6,220	4.04	4.66

OUACHITA RIVER AT ROCKPORT HIGHWAY BRIDGE, NEAR MALVERN, ARK.

LOCATION.—In NW. $\frac{1}{4}$ sec. 16, T. 4 S., R. 17 W., at Rockport highway bridge, $1\frac{3}{4}$ miles northwest of Malvern, Hot Spring County.

DRAINAGE AREA.—1,570 square miles (measured on base map of Arkansas).

RECORDS AVAILABLE.—March 3, 1903, to April 30, 1905, and June 29, 1922, to September 30, 1924.

EQUIPMENT.—Chain gage on bridge. Gage used 1903 to 1905 was a vertical staff fastened to web between cylindrical piers of bridge; datum 2.0 feet above that of chain gage. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of rock with outcropping dikes. Small trees grow on the rocks projecting above low water. Control is a rock outcrop and remains of a timber crib and rock filled dam, 100 feet below gage. Trees and brush grow at control and may cause backwater by catching drift; otherwise the control is practically permanent.

EXTREMES OF DISCHARGE.—1922-1924: Maximum stage, determined from levels to floodmarks, 30.3 feet May 15, 1923) discharge, estimated from extension of rating curve, 89,000 second-feet); minimum stage recorded, 1.28 feet October 1 and 3, 1922 (discharge, 61 second-feet).

1903-1905: Maximum stage recorded, 20.2 feet May 9, 1903 (discharge, 37,400 second-feet); minimum stage, 0 foot December 18-20, 1904 (discharge, 40 second-feet).

ACCURACY.—1922-1924: Stage-discharge relation changed during 1923 and 1924. Rating curves fairly well defined between 3,000 and 14,000 second-feet and poorly defined between 100 and 3,000 second-feet. Gage read to hundredths twice daily during intermittent periods only; readings rather unreliable. Records poor.

1903-1905: Data collected by United States Geological Survey and published in Water Supply Papers 99, 131 and 173. Tables of monthly discharge are considered fair.

DISCHARGE MEASUREMENTS OF OUACHITA RIVER AT ROCKPORT HIGHWAY
BRIDGE, NEAR MALVERN, ARK., DURING 1903 AND 1904

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1903			
May 15.....	J. M. Giles.....	5.60	4,400
May 16.....	J. M. Giles.....	5.00	3,460
July 9.....	J. M. Giles.....	.65	171
July 9.....	J. M. Giles.....	.65	198
July 10.....	J. M. Giles.....	.80	243
1904			
April 25.....	J. M. Giles.....	12.30	17,700
April 25.....	J. M. Giles.....	11.60	15,700
April 26.....	J. M. Giles.....	8.45	8,850
April 26.....	J. M. Giles.....	7.90	7,990

DAILY GAGE HEIGHT, IN FEET, OF OUACHITA RIVER AT ROCKPORT HIGHWAY
BRIDGE, NEAR MALVERN, ARK., FOR THE YEARS ENDING
SEPTEMBER 30, 1903-1905

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903							
1.....	.....	3.3	.....	6.4	1.1	2.6	4.1
2.....	.....	3.2	.....	6.0	.9	1.7	3.2
3.....	5.7	3.0	1.8	5.6	.9	1.3	2.5
4.....	5.5	2.8	1.8	4.3	.9	1.1	2.3
5.....	5.5	2.8	1.8	4.0	.9	1.0	2.1
6.....	6.4	2.7	2.0	3.5	.9	1.0	1.6
7.....	11.3	2.6	2.8	3.0	.9	1.0	1.4
8.....	10.9	2.5	9.2	3.0	.8	1.0	1.4
9.....	9.9	3.0	20.2	2.7	.7	1.0	1.4
10.....	19.4	2.8	10.6	2.9	.8	1.2	1.2
11.....	20.0	2.6	7.2	2.8	.8	3.3	1.0
12.....	13.3	2.8	7.8	2.2	.9	5.0	1.0
13.....	8.8	2.6	7.6	2.0	.8	6.4	1.0
14.....	7.3	2.6	7.2	1.8	.7	5.0	1.0
15.....	6.4	2.4	5.8	1.5	.7	4.8	1.0
16.....	5.7	2.5	5.1	1.4	.7	5.3	1.0
17.....	5.4	2.4	4.6	1.4	.6	4.1	1.9
18.....	5.0	2.3	4.3	1.2	.6	4.0	6.4
19.....	10.6	2.0	4.4	1.0	.6	7.8	4.9
20.....	6.6	1.9	9.5	1.0	.5	6.1	4.6
21.....	11.0	1.8	8.5	1.0	.8	3.9	4.6
22.....	8.5	1.8	6.5	.9	.8	3.3	4.0
23.....	6.8	1.8	5.0	.9	.7	2.8	3.6
24.....	5.9	1.8	4.4	.8	.7	2.5	2.8
25.....	5.2	1.8	3.4	.8	.7	2.2	2.0
26.....	4.8	1.8	3.2	1.0	.7	1.9	1.8
27.....	4.6	1.8	2.9	1.5	.7	1.5	1.6
28.....	4.2	1.8	2.8	1.3	.7	.9	1.3
29.....	4.0	1.8	2.8	1.2	.6	2.5	1.0
30.....	3.7	1.8	4.8	1.1	.5	8.0	1.0
31.....	3.5	.....	7.6	.....	2.2	6.9	.....

DAILY GAGE HEIGHT, IN FEET, OF OUACHITA RIVER AT ROCKPORT HIGHWAY
BRIDGE, NEAR MALVERN, ARK., FOR THE YEARS ENDING
SEPTEMBER 30, 1903-1905—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903-04												
1.....	1.0	1.0	0.7	.....	2.9	3.8	4.5	3.8	1.0	2.0	3.0	0.5
2.....	1.0	.9	.7	.....	2.7	3.4	4.2	3.8	1.0	1.7	1.7	.5
3.....	4.4	.9	.7	.....	2.4	3.0	3.9	3.6	1.0	1.0	1.2	2.1
4.....	4.0	.9	.7	.....	2.3	2.9	3.5	3.0	4.9	1.2	3.5	1.8
5.....	15.6	.8	.7	.....	2.2	2.8	3.3	3.0	12.85	1.1	2.7	1.4
6.....	8.7	.8	.7	.....	2.0	2.7	4.0	3.0	16.65	1.1	2.2	1.0
7.....	7.0	.8	.7	.....	2.0	2.6	4.4	4.5	12.95	1.0	3.5	.8
8.....	5.6	.8	.7	.....	1.9	2.5	6.0	6.0	8.7	1.0	2.8	.8
9.....	4.3	.8	.7	.....	1.8	2.5	6.1	5.6	9.7	1.0	2.8	.8
10.....	3.7	.8	1.0	.....	1.8	2.3	6.1	4.7	10.0	1.0	2.2	.7
11.....	3.3	.7	1.0	.....	1.7	2.2	5.1	3.8	7.6	1.2	2.0	.6
12.....	3.0	.7	1.0	.....	1.6	2.1	4.6	3.3	5.7	1.2	1.9	.6
13.....	2.7	.7	1.0	.....	1.6	4.2	4.0	3.7	4.8	1.1	1.8	.7
14.....	2.7	.7	1.0	.....	1.6	5.3	3.7	3.1	4.4	2.0	1.8	.7
15.....	2.4	.7	1.0	.....	1.5	4.7	3.3	3.0	3.8	1.9	1.2	.5
16.....	2.0	.7	1.0	.....	1.5	4.4	3.3	2.6	3.0	1.0	1.1	.5
17.....	1.9	.7	1.0	.....	1.5	6.0	6.6	2.0	2.7	1.0	1.8	.6
18.....	1.9	.7	1.0	.....	2.4	17.7	4.9	1.9	2.8	1.0	2.0	.6
19.....	1.8	.7	1.0	.....	11.7	11.3	4.4	1.6	2.8	1.0	1.0	.6
20.....	1.8	.7	1.0	.....	11.7	8.0	3.7	1.0	2.4	2.3	1.0	.5
21.....	1.8	.7	1.0	.....	9.4	7.7	3.6	1.0	2.3	2.5	.7	.5
22.....	1.6	.7	1.0	.....	11.2	6.7	4.1	1.0	2.0	3.7	.7	.5
23.....	1.6	.7	1.6	.....	9.4	8.5	4.0	1.0	2.1	3.0	.7	.5
24.....	1.6	.7	1.8	.....	7.9	6.5	5.4	1.0	3.0	2.2	.6	.6
25.....	1.4	.8	3.2	.....	6.5	6.1	11.9	1.0	3.4	2.1	.6	.7
26.....	1.4	.8	3.0	.....	5.7	5.6	8.7	1.0	2.0	2.0	.5	.8
27.....	1.4	.8	.....	.....	5.0	6.1	5.0	1.3	2.0	1.9	.4	.9
28.....	1.4	.8	.....	.....	4.6	6.6	4.5	1.0	2.0	1.9	.4	.8
29.....	1.3	.7	.....	.....	4.1	5.4	4.3	1.0	2.0	1.8	.5	1.0
30.....	1.3	.7	.....	.....	.....	5.0	4.3	1.0	2.0	2.0	.5	1.0
31.....	1.3	.....	.....	.....	.....	4.4	.....	1.0	.....	2.5	.5	.....
1904-05												
1.....	.....	.....	0.3	0.4	3.0	3.8	6.4	.....	.....	.....	.....	.....
2.....	.....	.....	.4	.3	3.9	3.7	5.4	.....	.....	.....	.....	.....
3.....	.....	.....	.2	1.3	3.2	3.2	6.1	.....	.....	.....	.....	.....
4.....	.....	.....	.1	1.3	2.8	3.0	12.0	.....	.....	.....	.....	.....
5.....	.....	.....	.1	1.2	2.6	2.9	7.9	.....	.....	.....	.....	.....
6.....	.....	.....	.1	1.2	2.4	2.7	6.1	.....	.....	.....	.....	.....
7.....	.....	.....	.1	1.2	2.4	2.7	5.2	.....	.....	.....	.....	.....
8.....	.....	.....	.1	1.0	3.0	4.6	4.7	.....	.....	.....	.....	.....
9.....	.....	.....	.1	1.3	3.7	12.5	4.2	.....	.....	.....	.....	.....
10.....	.....	.....	.1	2.0	4.5	15.8	3.8	.....	.....	.....	.....	.....
11.....	.....	.....	.1	1.9	4.9	11.2	7.5	.....	.....	.....	.....	.....
12.....	.....	.....	.1	11.2	5.8	8.1	7.9	.....	.....	.....	.....	.....
13.....	.....	.....	.2	10.9	6.0	6.5	6.3	.....	.....	.....	.....	.....
14.....	.....	.....	.2	7.5	5.0	5.5	6.7	.....	.....	.....	.....	.....
15.....	.....	.....	.2	5.2	4.7	4.8	8.6	.....	.....	.....	.....	.....
16.....	.....	.....	.2	5.1	4.0	4.2	8.5	.....	.....	.....	.....	.....
17.....	.....	.....	.1	5.0	3.7	3.9	6.7	.....	.....	.....	.....	.....
18.....	.....	.....	.0	3.5	3.5	4.0	5.6	.....	.....	.....	.....	.....
19.....	.....	.....	.0	3.8	4.0	4.0	5.4	.....	.....	.....	.....	.....
20.....	.....	.....	.0	3.8	3.7	4.0	6.5	.....	.....	.....	.....	.....
21.....	.....	0.8	.1	3.6	3.7	3.9	7.7	.....	.....	.....	.....	.....
22.....	.....	1.0	.1	3.2	4.2	3.7	7.4	.....	.....	.....	.....	.....
23.....	.....	1.0	.3	3.0	5.0	3.5	6.0	.....	.....	.....	.....	.....
24.....	.....	.6	.2	2.9	5.6	3.5	5.3	.....	.....	.....	.....	.....
25.....	.....	.6	.4	2.7	5.7	3.1	7.5	.....	.....	.....	.....	.....
26.....	.....	.4	1.1	2.5	5.4	3.0	8.3	.....	.....	.....	.....	.....
27.....	.....	.4	3.0	2.1	4.9	3.0	7.1	.....	.....	.....	.....	.....
28.....4	3.3	2.0	4.2	2.9	6.0
29.....4	3.0	2.4	4.5	5.4
30.....4	2.0	2.5	8.4	4.6
31.....	2.0	2.7	8.9

OUACHITA RIVER BASIN

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MONTHLY DISCHARGE OF OUACHITA RIVER AT ROCKPORT HIGHWAY BRIDGE,
NEAR MALVERN, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1903-1905

(Drainage area, 1,570 square miles.)

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1903					
March 3-31.....	36,900	1,900	8,910	5.68	6.13
April.....	1,710	640	1,010	.643	.72
May.....	37,400	640	5,230	3.33	3.84
June.....	5,430	240	1,210	.771	.86
July.....	880	155	248	.158	.18
August.....	8,100	270	2,180	1.39	1.60
September.....	5,430	300	1,180	.752	.84
1903-04					
October.....	25,900	300	2,320	1.48	1.71
November.....	300	210	229	.146	.16
December 1-26.....	1,620	210	386	.246	.24
February.....	16,200	495	3,780	2.41	2.60
March.....	31,200	820	4,690	2.99	3.45
April.....	16,600	1,710	3,640	2.32	2.59
May.....	4,860	300	1,300	.828	.95
June.....	28,500	270	4,570	2.91	3.25
July.....	2,100	300	630	.401	.46
August.....	1,900	130	617	.393	.45
September.....	820	155	248	.158	.18
1904					
November 21-30.....	300	130	185	.118	.04
December.....	1,710	40	267	.170	.20

DAILY DISCHARGE, IN SECOND-FEET, OF OUACHITA RIVER AT ROCKPORT HIGH-
WAY BRIDGE, NEAR MALVERN, ARK., FOR THE YEARS ENDING
SEPTEMBER 30, 1922-1924

Day.	June.	July.	Aug.	Sept.
1922				
1.....		340	191	78
2.....		325	180	74
3.....		325	214	74
4.....		310	180	70
5.....		280	202	70
6.....		252	191	70
7.....		226	151	67
8.....		191	142	70
9.....		170	358	67
10.....		160	266	67
11.....		160	214	67
12.....		142	180	67
13.....		151	160	67
14.....		515	142	67
15.....		340	134	67
16.....		280	134	67
17.....		214	127	67
18.....		226	127	67
19.....		202	127	67
20.....		180	151	70
21.....		239	160	70
22.....		160	151	70
23.....		134	142	78
24.....		134	112	78
25.....		142	112	81
26.....		191	106	74
27.....		160	94	70
28.....		202	89	70
29.....	310	160	85	70
30.....	515	134	81	67
31.....		127	78

OUACHITA RIVER BASIN

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DAILY DISCHARGE, IN SECOND-FEET, OF OUACHITA RIVER AT ROCKPORT HIGHWAY BRIDGE, NEAR MALVERN, ARK., FOR THE YEARS ENDING SEPTEMBER 30, 1922-1924—Continued

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1922-23												
1.....	63	92	217	3,460	13,000	6,010	1,210	6,170	1,480	220	.....	79
2.....	63	98	217	2,650	10,900	4,450	760	4,550	910	196	.....	86
3.....	63	92	217	1,840	43,000	3,370	2,650	4,050	2,830	174	.....	102
4.....	63	92	262	1,750	30,600	2,920	8,270	3,100	2,650	163	.....	102
5.....	63	98	306	1,410	8,830	2,830	5,570	2,560	2,740	152	.....	126
6.....	77	92	478	1,070	5,570	22,900	4,790	2,020	20,200	134	.....	790
7.....	158	98	478	730	4,250	30,200	3,750	1,750	26,500	134	.....	670
8.....	126	98	478	615	4,690	13,200	3,010	1,670	18,900	134	.....	478
9.....	126	92	615	565	5,130	5,850	2,920	1,390	9,400	126	.....	420
10.....	240	92	.....	499	5,570	4,790	.....	1,210	5,290	126	.....	274
11.....	306	98	.....	438	6,010	3,950	.....	910	19,500	145	.....	196
12.....	228	694	.....	402	4,450	3,650	.....	910	10,200	126	.....	163
13.....	186	1,390	.....	386	3,850	3,370	.....	850	4,350	126	.....	152
14.....	150	458	.....	370	3,550	3,010	.....	3,550	3,550	118	.....	196
15.....	142	420	.....	370	3,190	3,100	.....	.....	2,650	126	.....	170
16.....	142	945	.....	354	2,740	25,800	.....	.....	1,570	134	.....	145
17.....	134	945	.....	438	2,110	22,200	.....	.....	1,390	642	.....	118
18.....	134	790	.....	565	1,750	8,270	.....	.....	1,210	760	.....	219
19.....	134	670	.....	520	1,570	6,170	.....	.....	980	642	.....	320
20.....	126	730	.....	478	1,210	4,350	1,210	.....	730	402	.....	3,190
21.....	112	790	.....	4,790	980	3,460	1,300	.....	615	320	.....	7,370
22.....	104	565	.....	16,500	910	2,830	1,390	.....	499	220	.....	6,020
23.....	104	478	.....	8,450	850	2,740	1,210	.....	438	185	.....	4,670
24.....	98	420	240	5,570	820	2,020	.....	.....	402	145	.....	3,370
25.....	98	338	228	5,030	820	1,750	.....	14,000	420	145	.....	2,350
26.....	98	322	228	3,460	32,300	1,300	.....	15,900	438	163	.....	1,330
27.....	95	287	240	3,370	29,400	1,130	.....	7,190	402	145	.....	690
28.....	92	252	1,390	5,290	10,900	980	.....	4,350	352	126	.....	615
29.....	92	228	1,130	6,830	.....	910	.....	3,190	274	134	.....	448
30.....	92	217	760	30,200	.....	850	.....	2,650	246	144	.....	408
31.....	92	.....	2,290	28,300	.....	850	.....	2,110	.....	154	.....	.....
1923-24												
1.....	.....	1,000	1,340	.....	.....	940	.....	.....	.....	.....	.....	196
2.....	.....	.....	1,700	.....	.....	940	.....	.....	.....	.....	.....	980
3.....	.....	940	1,930	.....	.....	880	.....	.....	.....	.....	142	499
4.....	.....	.....	2,410	.....	.....	824	.....	.....	.....	.....	134	438
5.....	.....	4,910	3,130	.....	.....	770	.....	.....	359	.....	142	278
6.....	.....	3,750	2,490	.....	.....	716	.....	.....	344	217	134	186
7.....	314	3,460	1,850	.....	.....	666	.....	1,340	302	176	126	176
8.....	302	2,970	1,410	.....	.....	.....	.....	1,340	.....	176	126	166
9.....	268	2,490	7,190	.....	.....	.....	2,410	940	.....	166	126	158
10.....	279	1,620	6,650	.....	824	.....	2,090	716	.....	166	119	154
11.....	258	1,060	8,640	.....	940	.....	1,930	716	.....	158	112	150
12.....	238	593	12,400	.....	1,060	.....	1,770	.....	.....	158	112	150
13.....	228	570	.....	1,200	1,060	.....	.....	.....	.....	158	104	142
14.....	248	504	.....	1,410	1,200	940	.....	.....	.....	166	98	126
15.....	268	484	.....	2,570	1,340	940	.....	.....	.....	158	98	126
16.....	268	427	.....	.....	1,340	.....	.....	.....	.....	150	98	134
17.....	504	.....	.....	.....	1,410	.....	.....	.....	.....	150	542	134
18.....	484	.....	.....	.....	1,270	.....	.....	.....	.....	142	240	196
19.....	408	.....	.....	.....	1,130	.....	.....	427	.....	142	166	186
20.....	329	.....	.....	.....	.....	.....	.....	374	.....	142	134	176
21.....	290	.....	.....	.....	.....	.....	.....	344	.....	142	134	550
22.....	268	.....	.....	.....	.....	.....	524	290	.....	.....	126	700
23.....	258	.....	.....	.....	1,930	4,790	504	268	.....	.....	112	322
24.....	258	.....	.....	.....	2,010	3,210	504	268	.....	.....	112	206
25.....	248	.....	.....	.....	1,770	2,730	484	547	.....	.....	104	176
26.....	248	.....	.....	.....	1,620	.....	524	.....	.....	.....	112	176
27.....	248	524	.....	4,150	1,270	.....	824	.....	.....	.....	112	176
28.....	248	593	.....	3,850	.....	2,090	1,620	.....	.....	.....	119	160
29.....	248	824	.....	3,290	.....	2,970	.....	.....	.....	.....	126	910
30.....	258	1,060	.....	2,810	.....	.....	.....	.....	.....	.....	126	438
31.....	248	.....	.....	2,410	.....	.....	.....	.....	.....	.....	134	.....

NOTE.—Gage-height records incomplete. Discharge interpolated or estimated October 27, November 12, 20, 27, December 4, 1922; January 5, 6, February 8-10, June 17, 25, July 4, 15, 30, 31, September 1, 15, 18, 22, 25, October 14, 27, 28, 1923; September 10, 19, 21, 28, 1924.

MONTHLY DISCHARGE OF OUACHITA RIVER AT ROCKPORT HIGHWAY BRIDGE,
NEAR MALVERN, ARK., FOR THE YEARS ENDING
SEPTEMBER 30, 1922-1924

(Drainage area, 1,570 square miles.)

Month.	Discharge in second-feet.				Run-off in inches.
	Maximum.	Minimum.	Mean.	Per square mile.	
1922					
July.....	515	127	218	0.139	0.16
August.....	358	78	154	.098	.11
September.....	81	67	70.2	.045	.05
1922-23					
October.....	306	63	123	0.078	0.09
November.....	1,390	92	399	.254	.28
January.....	30,200	354	4,410	2.81	3.24
February.....	43,000	820	8,530	5.43	5.65
March.....	30,200	850	6,430	4.10	4.73
June.....	26,500	246	4,700	2.99	3.34
July.....	760	118	215	.137	.16
September.....	7,370	79	1,180	.752	.84
1923-24					
October 7-31.....	504	228	289	0.184	0.17
December 1-12.....	12,400	1,340	4,260	2.71	1.21
July 6-21.....	217	142	160	.102	.06
August 3-31.....	542	98	140	.089	.10
September.....	980	126	286	.182	.20

OUACHITA RIVER AT ARKADELPHIA, ARK.

LOCATION.—At the St. Louis, Iron Mountain & Southern Railway bridge at Arkadelphia, Clark County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—August 1, 1905, to December 31, 1906.

EQUIPMENT.—Chain gage on bridge. Zero of gage 121.43 feet above mean sea level. Discharge measurements made from bridge.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and 1,200 feet below gage. Both banks overflow, but railroad embankment confines flood flow to the bridge section.

EXTREMES OF STAGE.—Maximum stage recorded, 20.6 feet May 4, 1906; minimum stage, 1.3 feet August 13, 1905.

A stage of 27.0 feet occurred in 1882.

ACCURACY.—Records collected by United States Geological Survey and published in Water Supply Papers 173 and 209. Gage ordinarily read to tenths once daily. Rating curve fairly well defined above 400 second-feet. Monthly discharge values fair above 400 second-feet; poor below.

NOTE.—For miscellaneous gaging station data of the Ouachita River near Arkadelphia see page 106.

DISCHARGE MEASUREMENTS OF OUACHITA RIVER AT ARKADELPHIA, ARK.,
DURING 1906.

Date.	Made by	Gage height, feet.	Discharge, second-feet.
May 5.....	J. R. Nagle.....	17.4	25,500
May 6.....	J. R. Nagle.....	12.15	15,800
May 6.....	J. R. Nagle.....	11.6	15,600
May 7.....	J. R. Nagle.....	10.3	13,000
May 7.....	J. R. Nagle.....	10.1	12,600
May 7.....	J. R. Nagle.....	9.5	11,200
June 2.....	T. U. Taylor.....	4.6	1,600
June 20.....	T. U. Taylor.....	3.2	520

DAILY GAGE HEIGHT, IN FEET, OF OUACHITA RIVER AT ARKADELPHIA, ARK.,
FOR THE YEARS ENDING SEPTEMBER 30, 1905-1906

Day.											Aug.	Sept.
1905												
1.....											5.7	2.9
2.....											3.8	2.9
3.....											2.8	3.0
4.....											2.6	2.8
5.....											2.3	2.8
6.....											2.2	2.7
7.....											2.0	2.7
8.....											1.9	2.9
9.....											1.7	3.5
10.....											1.6	3.5
11.....											1.5	3.3
12.....											1.4	4.1
13.....											1.3	4.6
14.....											1.6	4.3
15.....											2.3	3.8
16.....											2.0	3.6
17.....											2.8	3.4
18.....											1.9	3.2
19.....											1.8	3.2
20.....											2.2	3.2
21.....											2.2	3.4
22.....											2.1	3.7
23.....											1.8	4.0
24.....											1.5	3.3
25.....											1.4	3.2
26.....											1.4	3.1
27.....											2.4	3.0
28.....											3.1	3.0
29.....											3.0	3.0
30.....											3.0	3.0
31.....											2.9	.....
Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905-06												
1.....	2.9	4.6	7.1	6.4	5.1	6.2	9.4	4.0	3.5	3.0	4.8	3.8
2.....	2.9	4.3	3.4	6.1	4.5	5.9	7.8	5.1	4.6	3.0	4.6	2.5
3.....	3.0	4.1	15.1	10.85	4.7	6.1	7.0	16.75	4.6	3.0	4.1	3.4
4.....	3.6	4.0	10.3	14.15	4.6	5.8	6.4	20.6	4.6	2.9	3.7	2.3
5.....	3.9	5.1	8.3	11.2	4.7	5.5	6.3	18.55	4.5	2.9	3.5	3.3
6.....	4.0	9.2	7.2	8.5	4.7	5.2	6.9	11.6	4.4	2.8	3.4	2.2
7.....	3.9	8.3	6.6	7.3	4.6	5.1	6.3	9.5	4.4	2.8	3.4	3.8
8.....	3.7	7.2	6.1	6.7	4.5	5.3	6.0	8.1	4.3	2.9	3.6	3.7
9.....	3.5	6.6	5.7	6.1	4.4	5.4	5.6	7.0	4.3	3.0	3.4	3.5
10.....	3.4	11.0	5.4	5.7	4.3	5.3	5.4	6.3	4.3	3.1	3.3	3.5
11.....	3.3	11.7	5.1	5.5	4.2	5.1	5.1	5.8	4.0	3.3	4.1	3.3
12.....	3.1	8.1	5.0	5.2	4.1	4.9	5.0	5.4	3.8	3.2	4.5	3.5
13.....	3.0	8.2	4.9	5.0	4.3	4.8	5.0	5.1	3.6	4.6	3.8	3.3
14.....	3.0	7.0	5.2	4.9	4.6	5.0	4.9	4.8	3.5	6.1	4.9	3.7
15.....	2.9	6.8	5.4	4.8	4.8	7.2	8.2	4.6	3.4	5.8	4.7	3.3
16.....	2.9	6.8	5.3	4.6	5.1	6.8	6.5	4.4	3.4	5.0	3.7	4.5
17.....	2.9	5.5	5.2	4.4	5.0	6.3	5.7	4.2	3.3	6.7	3.7	4.0
18.....	2.9	5.2	5.0	4.3	4.8	5.8	5.2	4.1	3.3	5.2	3.4	3.6
19.....	3.1	4.9	5.1	4.2	4.8	6.8	4.9	4.0	3.5	4.7	3.3	3.4
20.....	4.7	4.7	7.4	4.1	4.9	7.7	4.7	3.9	3.3	4.2	3.4	3.4
21.....	4.7	4.5	10.3	6.9	5.4	7.1	4.6	3.8	3.3	3.9	3.3	3.6
22.....	4.5	4.3	10.5	17.05	6.1	6.5	4.9	3.7	3.7	5.7	3.4	3.5
23.....	4.2	4.2	12.7	19.65	6.1	6.0	4.7	3.7	3.7	5.8	4.1	2.3
24.....	4.2	4.4	10.4	14.8	8.1	5.7	4.5	3.8	3.5	4.8	3.7	3.1
25.....	6.3	4.3	8.6	8.7	11.7	6.4	4.4	3.8	3.9	4.3	3.5	3.0
26.....	9.5	4.6	7.5	7.6	9.5	7.5	4.2	3.7	3.6	3.9	3.6	3.9
27.....	8.7	4.9	6.8	6.9	7.7	8.2	4.1	3.7	3.4	3.9	4.0	3.4
28.....	6.9	4.8	8.0	6.5	6.7	8.3	4.1	3.6	3.3	6.3	3.6	3.4
29.....	5.8	10.7	7.7	6.0	.....	9.4	4.0	3.5	3.2	9.3	5.5	4.9
30.....	5.2	9.5	7.6	5.6	.....	16.65	4.1	3.5	3.1	6.3	4.8	4.7
31.....	4.9	.....	7.2	5.3	.....	14.1	...	3.4	.....	5.2	4.2	.....

DAILY GAGE HEIGHT, IN FEET, OF OUACHITA RIVER AT ARKADELPHIA, ARK.,
FOR THE YEARS ENDING SEPTEMBER 30, 1905-1906—*Continued*

Day.	Oct.	Nov.	Dec.
1906			
1.....		3.0	3.9
2.....		2.9	3.9
3.....		2.9	3.7
4.....		2.9	3.6
5.....		2.9	3.6
6.....		2.9	3.5
7.....		2.9	3.4
8.....		2.8	3.4
9.....		2.8	3.6
10.....		2.8	3.9
11.....		2.8	3.9
12.....		2.8	3.8
13.....		2.8	3.7
14.....		2.8	3.6
15.....		2.8	10.0
16.....		2.8	16.55
17.....		3.8	18.6
18.....		6.3	17.6
19.....		5.4	11.8
20.....		7.7	8.5
21.....		7.9	7.1
22.....		7.1	6.4
23.....		6.5	5.9
24.....		5.9	5.7
25.....		5.3	5.3
26.....		5.0	5.2
27.....		4.7	5.0
28.....		4.4	5.3
29.....		4.3	5.7
30.....		4.1	6.0
31.....			6.1

MONTHLY DISCHARGE OF OUACHITA RIVER AT ARKADELPHIA, ARK., FOR THE
YEARS ENDING SEPTEMBER 30, 1905-1906

Month.	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.
1905			
August.....	3,380	50	301
September.....	1,730	305	630
1905-06			
October.....	11,100	380	1,870
November.....	15,600	1,100	4,970
December.....	22,600	640	6,720
January.....	31,900	1,190	7,380
February.....	15,600	1,190	3,380
March.....	25,700	1,980	5,740
April.....	10,900	1,100	3,370
May.....	33,800	640	5,340
June.....	1,730	470	964
July.....	10,700	340	2,050
August.....	3,030	580	1,090
September.....	2,110	420	815
The year.....	33,800	340	3,640
1906			
October.....	2,100	305	758
November.....	7,800	340	1,830
December.....	29,700	640	5,530

LITTLE MISSOURI RIVER NEAR MURFREESBORO, ARK.

LOCATION.—In SE. $\frac{1}{4}$ sec. 13, T. 8 S., R. 26 W., at highway bridge 1 mile below Muddy Creek and 2 miles southwest of Murfreesboro, Pike County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 2, 1927, to September 30, 1928.

EQUIPMENT.—Chain gage on bridge. Zero of gage is 323.70 feet above mean sea level. Discharge measurements made from bridge or by wading.

CHANNEL AND CONTROL.—Channel straight for 700 feet above and below gage. Both banks low, wooded, subject to overflow. Bed composed of gravel. Control is gravel bar one-fourth mile downstream; may shift.

EXTREMES OF STAGE.—Maximum stage recorded, 7.75 feet at 1:50 p. m. April 21, 1928 (discharge 8,740 second-feet); minimum stage, 1.70 feet September 27-30, 1928 (discharge, 5.0 second-feet).

ACCURACY.—Stage-discharge relation permanent during the year. Rating curve well defined between 10 and 6,000 second-feet; extended beyond these limits. Gage ordinarily read to hundredths once daily except Sundays. Records fair.

COOPERATION.—Part of gage-height record furnished by Arkansas Power & Light Company.

OUACHITA RIVER BASIN

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DAILY DISCHARGE, IN SECOND-FEET, OF LITTLE MISSOURI RIVER NEAR MURFREESBORO, ARK., FOR THE YEAR ENDING SEPTEMBER 30, 1928

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1927-28												
1.....		73			136	224	98	284	43	58	160	73
2.....	51	86			120	205	89	263	43	43	144	45
3.....	269	53			114	224	89	224	336	43	89	17
4.....	192	55			120	229	114	234	630	26	84	17
5.....	59	53		317	212	234	710	263	400	26	637	17
6.....	26	43			305	205	7,490	196	263	40	1,190	11
7.....	66	71			1,080	160	2,370	128	178	29	630	9.4
8.....	53	152			750	178	1,540	117	128	26	425	11
9.....	104	34			560	630	1,030	114	340	22	178	12
10.....	89	117			458	525	750	108	450	19	178	12
11.....	160	305			363	400	630	98	560	24	108	9.4
12.....	51				363	363	490	89	880	24	76	9.4
13.....	51				363	253	388	89	710	24	43	9.4
14.....	51				305	243	363	89	1,420	24	43	8.0
15.....	57				284	253	334	84	750	3,400	43	8.0
16.....	36				243	790	305	136	560	6,770	40	7.4
17.....	34				234	595	295	215	432	1,080	38	6.8
18.....	34			413	224	490	284	169	305	1,030	36	6.8
19.....	24			425	201	363	253	114	187	490	54	8.0
20.....	23			425	178	375	205	204	160	263	73	8.0
21.....	23			425	178	253	8,740	295	140	205	40	8.0
22.....	22			490	425	243	5,560	317	253	160	22	7.4
23.....	24			490	525	243	2,370	196	205	114	22	7.1
24.....	22			351	425	243	1,360	144	200	790	22	6.8
25.....	19			340	413	220	930	95	196	229	19	6.2
26.....	20			340	388	196	710	84	120	239	26	7.4
27.....	16			196	363	160	670	72	108	490	33	5.0
28.....	36			215	305	152	490	59	63	490	28	5.0
29.....	13			178	274	144	420	59	63	542	22	5.0
30.....	20			160		114	551	47	73	595	19	5.0
31.....	68			140		108		43		328	15	

NOTE.—No gage-height record November 12 to January 4 and January 6-17. After February 1 gage ordinarily not read on Sundays; discharge interpolated for following days: February 5, 12, 19, 26, March 4, 25, April 1, 15, 22, May 6, 13, 20, 27, June 3, 10, 17, 24, July 1, 8, 15, 22, 29, August 5, 12, 19, 26, 28, September 2, 4, 9, 16, 23, 30.

MONTHLY DISCHARGE OF LITTLE MISSOURI RIVER NEAR MURFREESBORO, ARK., FOR THE YEAR ENDING SEPTEMBER 30, 1928

Month.	Discharge in second-feet.		
	Maximum	Minimum.	Mean.
October 2-31.....	269	13	57.1
November 1-11.....	305	34	94.7
January 18-31.....	490	140	328
February.....	1,080	114	342
March.....	790	103	291
April.....	8,740	89	1,310
May.....	317	43	149
June.....	1,420	43	340
July.....	6,770	19	569
August.....	1,190	15	146
September.....	73	5.0	12.3

RED RIVER BASIN

RED RIVER AT GARLAND CITY, ARK.

LOCATION.—In SE. $\frac{1}{4}$ sec. 17, T. 14 S., R. 25 W., at St. Louis Southwestern Railway bridge at Garland City, Miller County. Sulphur River enters 35 miles downstream.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1927, to September 30, 1928; gage-height record and discharge measurements only.

EQUIPMENT.—Chain gage on bridge. Discharge measurements made from bridge.

CHANNEL AND CONTROL.—Banks overflow at 29-foot stage. Flow confined by levees some distance back. Channel straight for 300 feet above and below gage, curved beyond. Bed composed of sand and silt; shifting. No well-defined control.

EXTREMES OF STAGE.—Maximum stage recorded, 25.8 feet at 8 a. m. May 24, 1928; minimum stage, 4.8 feet September 26-30, 1928.

A stage of 35.4 feet was reached April 23, 1927, on St. Louis-Southwestern Railroad Company's staff gage, which was set to same datum as present chain stage.

ACCURACY.—Gage read to tenths once daily. Data not sufficient for determination of discharge.

COOPERATION.—Part of gage-height record furnished by St. Louis Southwestern Railway Co.

NOTE.—For miscellaneous gaging station and discharge data of the Red River basin, see pages 106, 137.

DISCHARGE MEASUREMENTS OF RED RIVER AT GARLAND CITY, ARK., DURING THE YEARS ENDING SEPTEMBER 30, 1927 AND 1928

Date.	Made by	Gage height, feet.	Discharge, second-feet.
1927			
July 25.....	H. C. Beckman.....	14.68	21,200
September 30.....	V. L. Austin.....	6.15	2,340
1928			
January 19.....	V. L. Austin.....	7.66	7,240
March 19.....	H. C. Beckman.....	10.42	12,800
April 10.....	H. C. Beckman.....	25.23	75,600
August 2.....	A. L. Hill.....	13.94	20,300
August 3.....	A. L. Hill.....	13.73	21,200

RED RIVER BASIN

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DAILY GAGE HEIGHT, IN FEET, OF RED RIVER AT GARLAND CITY, ARK., FOR
THE YEAR ENDING SEPTEMBER 30, 1928

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1.....	6.2	6.4	6.7	13.9	8.5	8.3	7.1	23.9	12.5	19.7	14.5	5.8
2.....	6.5	6.4	6.7	14.9	8.5	7.9	6.8	22.4	11.8	18.7	14.0	6.3
3.....	6.5	6.5	6.4	13.9	7.9	8.7	6.6	20.9	11.4	17.7	13.8	6.5
4.....	6.5	6.8	6.4	11.1	7.3	7.4	6.5	19.0	12.0	16.5	13.2	6.3
5.....	8.5	6.6	6.3	9.9	7.3	7.5	6.4	17.4	13.5	15.4	12.0	6.2
6.....	14.2	6.9	5.9	9.4	6.9	7.9	6.2	15.4	14.2	14.2	11.4	5.8
7.....	15.3	6.8	5.9	7.4	8.4	7.9	14.1	13.5	13.9	13.0	11.6	5.6
8.....	13.0	6.6	5.9	8.7	8.4	7.7	22.8	12.7	13.4	11.8	11.5	5.8
9.....	13.0	6.5	5.9	8.6	9.4	7.5	24.3	13.2	14.4	11.0	11.3	6.2
10.....	12.8	6.5	5.8	9.7	11.9	7.7	25.2	13.4	15.6	10.4	10.8	6.0
11.....	14.1	6.4	6.7	10.3	14.9	8.9	25.1	12.3	15.8	9.9	10.7	6.0
12.....	14.1	6.3	6.8	10.3	15.4	9.3	25.2	11.5	16.1	9.7	9.5	5.8
13.....	13.6	6.3	6.7	9.9	14.5	9.3	24.1	10.8	16.4	9.4	8.8	5.7
14.....	13.1	6.3	7.8	9.3	12.9	9.1	22.9	10.2	18.0	9.3	8.4	5.5
15.....	12.2	6.3	9.3	8.7	11.3	8.6	21.4	9.6	18.6	9.2	8.1	5.3
16.....	11.6	6.4	11.3	8.4	10.3	8.4	20.0	9.4	20.3	9.2	8.0	5.3
17.....	10.5	6.4	16.9	8.1	9.8	7.9	18.9	10.0	21.7	10.0	7.9	5.2
18.....	9.9	6.3	21.7	7.9	9.4	9.2	17.5	15.0	22.3	10.3	7.7	5.2
19.....	9.3	10.0	21.7	7.7	8.9	10.4	16.0	17.4	22.7	10.8	7.2	5.0
20.....	8.9	9.7	23.1	7.6	8.7	11.5	14.0	17.5	23.2	10.8	7.0	5.1
21.....	8.5	8.6	25.4	10.4	8.9	10.5	12.3	22.7	23.6	10.0	6.8	5.0
22.....	8.4	8.3	22.4	11.9	8.9	9.5	11.6	24.5	22.6	9.8	6.7	5.0
23.....	8.1	7.3	15.9	14.0	8.9	9.0	13.6	25.3	20.6	9.4	6.5	5.0
24.....	7.6	7.3	13.6	15.5	10.0	8.7	19.6	25.8	20.7	9.2	6.5	4.9
25.....	7.3	7.2	11.5	15.0	10.3	8.3	23.2	24.4	22.0	9.0	6.8	4.9
26.....	7.1	6.9	8.8	13.9	10.3	7.8	24.8	23.8	23.0	8.9	6.8	4.8
27.....	7.0	6.9	8.8	12.6	9.5	7.6	25.3	21.9	23.8	8.9	6.7	4.8
28.....	6.8	6.9	8.5	10.9	9.2	7.5	25.1	20.1	23.0	8.8	6.4	4.8
29.....	6.6	6.7	8.5	9.9	8.7	7.4	24.7	18.0	21.8	9.8	6.2	4.8
30.....	6.5	6.7	8.2	9.4	.....	7.3	24.9	15.9	20.7	11.0	6.1	4.8
31.....	6.4	.....	9.0	8.7	.....	7.2	.....	14.0	.....	14.2	6.0	.....

MISCELLANEOUS DISCHARGE MEASUREMENTS
IN ARKANSAS

The following miscellaneous discharge measurements have been made in Arkansas by the United States Geological Survey and co-operating parties. Those of Ouachita River, Saline River, and Little River in the Ouachita River and Red River basins are published through the courtesy of the United States Engineer Office, Vicksburg, Miss.

St. Francis River basin:

St. Francis River (old channel) at Marked Tree.

White River basin:

White River near Habberton.

White River east of Rogers.

White River at Wild Cat Shoals.

White River at Wall's Ferry.

White River near Newport.

White River at Clarendon.

White River at War Eagle.

War Eagle Creek near War Eagle Mill.

Buffalo River, Sec. 8, T. 16 N., R. 20 W.

Buffalo River, Sec. 35, T. 16 N., R. 20 W.

North Fork of White River near Norfolk.

Mammoth Spring at Mammoth Spring.

Spring River at Hardy.

Spring River at Imboden.

Ouachita River Basin:

Ouachita River at Arkadelphia.

Ouachita River near Camden.

Ouachita River at Camden.

Saline River near Warren.

Red River basin:

Little River near Wilton.

ST. FRANCIS RIVER BASIN

Date.	Stream.	Tributary to	Locality	Gage height, feet.	Discharge, second-feet.
1927					
Sept. 20.....	St. Francis River (old channel)....	Mississippi River....	At Marked Tree.....	3.8	1,060
1928					
Jan. 11.....	St. Francis River (old channel)....	Mississippi River....	At Marked Tree.....	9.4	2,380
March 8.....	St. Francis River (old channel)....	Mississippi River....	At Marked Tree....	8.43	2,570
April 12.....	St. Francis River (old channel)....	Mississippi River....	At Marked Tree....	9.63	2,650
May 4.....	St. Francis River (old channel)....	Mississippi River....	At Marked Tree.....	13.89	2,340
June 21.....	St. Francis River (old channel)....	Mississippi River....	At Marked Tree.....	15.20	2,950
30.....	St. Francis River (old channel)....	Mississippi River....	At Marked Tree.....	17.79	2,640
Aug. 13.....	St. Francis River (old channel)....	Mississippi River....	At Marked Tree.....	5.24	1,530

WHITE RIVER BASIN

1909					
Aug. 1.....	White River.....	Mississippi River....	Near Habberton.....	^a 5.4	512
22.....	White River.....	Mississippi River....	East of Rogers.....	^a 4.9	143
1923					
Sept. 21.....	White River.....	Mississippi River....	Wildcat Shoals, 3 miles east of Flippin.....	5.48	1,270
Sept. 21.....	White River.....	Mississippi River....	Wildcat Shoals, 3 miles NE. of Flippin.....	5.50	1,280
1909					
Nov. 28.....	White River.....	Mississippi River....	At Walls Ferry.....	6.8	2,790
1904					
April 27.....	White River.....	Mississippi River....	Mo. Pac. R. R. bridge, 2½ miles SW. of Newport.	16.7	41,600
1927					
Sept. 24.....	White River.....	Mississippi River....	Clarendon.....	12.20	10,900
1928					
Jan. 14.....	White River.....	Mississippi River....	Clarendon.....	24.48	37,300
Mar. 12.....	White River.....	Mississippi River....	Clarendon.....	21.12	26,500
April 16.....	White River.....	Mississippi River....	Clarendon.....	29.80	108,000
1910					
April 4.....	War Eagle Creek.....	White River.....	Near War Eagle Mill.....	.....	199
April 4.....	War Eagle Creek.....	White River.....	Near War Eagle Mill.....	.....	180
Aug. 22.....	Buffalo River.....	White River.....	In sec. 8, T. 16 N., R. 20 W.....	3.6	43 6
April 8.....	Buffalo River.....	White River.....	In sec. 8, T. 16 N., R. 20 W.....	.....	179
Aug. 26.....	Buffalo River.....	White River.....	In sec. 35, T. 16 N., R. 20 W.....	3.8	85.2
1923					
Sept. 23.....	North Fork of White River.....	White River.....	Five miles northeast of Norfolk.....	1.74	717

WHITE RIVER BASIN—Continued

Date.	Stream.	Tributary to	Locality	Gage height, feet.	Discharge, second-feet.
1924					
Dec. 11.....	Mammoth Spring.....	Spring River.....	Near line between secs. 5 and 8, T. 21 N., R. 5 W....	.....	240
1926					
June 11.....	Mammoth Spring.....	Spring River.....	Near line between secs. 5 and 8, T. 21 N., R. 5 W....	.....	310
1927					
July 15.....	Spring River.....	Black River.....	Hardy.....	.....	1,570
1923					
July 26.....	Spring River.....	Black River.....	Imboden.....	1.62	776

OUACHITA RIVER BASIN

1909					
April 6.....	Ouachita River.....	Red River.....	Highway bridge at Arkadelphia.....	3.8	822
1928					
Aug. 24.....	Ouachita River.....	Red River.....	In E. ½ sec. 10, T. 13 S., R. 17 W., 2 miles north of Camden.....	1.21	589
Sept. 6.....	Ouachita River.....	Red River.....	In E. ½ sec. 10, T. 13 S., R. 17 W., 2 miles north of Camden.....	1.84	875
28.....	Ouachita River.....	Red River.....	In E. ½ sec. 10, T. 13 S., R. 17 W., 2 miles north of Camden.....	22	252
Mar. 18.....	Ouachita River.....	Red River.....	Highway bridge at Camden.....	15.60	8,330
Aug. 9.....	Ouachita River.....	Red River.....	Highway bridge at Camden.....	10.89	4,430
12.....	Saline River.....	Red River.....	In SW. ¼ sec. 15, T. 13 S., R. 9 W., 3½ miles south-east of Warren.....	2.32	226
22.....	Saline River.....	Red River.....	In SW. ¼ sec. 15, T. 13 S., R. 9 W., 3½ miles south-east of Warren.....	2.07	122
Sept. 27.....	Saline River.....	Red River.....	In SW. ¼ sec. 15, T. 13 S., R. 9 W., 3½ miles south-east of Warren.....	1.64	55.0

RED RIVER BASIN

1928					
Aug. 2.....	Little River.....	Red River.....	In NW. ¼ sec. 30, T. 11 S., R. 29 W., 3 miles north of Wilton.....	4.97	2,350
25.....	Little River.....	Red River.....	In NW. ¼ sec. 30, T. 11 S., R. 29 W., 3 miles north of Wilton.....	2.50	208
Sept. 24.....	Little River.....	Red River.....	In NW. ¼ sec. 30, T. 11 S., R. 29 W., 3 miles north of Wilton.....	1.88	38.7

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER
AND ITS TRIBUTARIES

A great number of discharge measurements of the Mississippi River at places bordering Arkansas and of tributaries in Arkansas have been made by the Mississippi River Commission and the United States Army Engineers. The results of these measurements have been published by the Commission in a report entitled "Results of Discharge Observations, Mississippi River and its Tributaries and Outlets, 1838-1923." The following tables, which include readings at the points listed below, have been copied from that report or from data furnished by the Commission. In the column headed "Method," "M" indicates velocity measurements with one meter; "MM" indicates the mean results of simultaneous measurements with two meters; "F" indicates double floats; "SF" indicates surface floats; and "R" denotes rod floats.

Plum Point Reach near Bullerton, Ark.

Fulton, Tenn.

Memphis, Tenn.

Hampton Landing, Ark.

Helena, Ark.

Friar Point, Miss.

Old Town Bend near Friar Point, Miss.

Chicot, Ark.

Arkansas City, Ark.

Greenville, Miss.

St. Francis River:

At Parkin, Ark.

Near mouth.

St. Francis Bay near mouth.

White River:

Batesville, Ark.

Clarendon, Ark.

Near mouth.

Arkansas River:

Little Rock, Ark.

Pine Bluff, Ark.

Near mouth.

Red River:

At Kye Smith, Ark.

At Dooley Ferry, Ark.

At Garland, Ark.

Above Sulphur River, Ark.

MISSISSIPPI RIVER

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT PLUM POINT REACH,
NEAR BULLERTON, ARK.

Gage heights refer to gage of Mississippi River Commission at Fulton, Tenn.

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1883				1891			
Sept. 5.....	8.4	204	F	Jan. 7.....	20.6	640	
Oct. 26.....	8.4	214		26.....	16.5	495	
Dec. 8.....	18.9	514		28.....	15.8	439	
1884				Sept. 19.....	7.2	155	M
Sept. 15.....	7.2	143	M	21.....	6.7	137	
				22.....	6.5	150	
1890				26.....	5.9	137	
Mar. 7.....	32.8	1,018	M	Nov. 5.....	2.9	82	
9.....	33.6	1,977		6.....	2.8	82	
12.....	34.2	1,129		10.....	2.8	82	
15.....	34.7	1,170		11.....	2.8	79	
				1894			
				Nov. 8.....	1.8	83	F
				10.....	1.9	82	F

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT FULTON, TENN.

Gage heights refer to Mississippi River Commission gage at Fulton, whose zero is 208.74 feet above mean Gulf level.

Feet above mean low tide.				Feet above mean low tide.				
Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	
1879				1880				
Nov. 29.....	8.8	264	F	Mar. 1.....	32.9	1,037	F	
Dec. 1.....	9.0	257		3.....	32.8	1,060		
3.....	9.8	272		5.....	32.7	1,044		
4.....	10.0	293		8.....	32.3	944		
6.....	10.3	300		10.....	32.1	1,038		
8.....	11.0	320		12.....	32.4	1,031		
10.....	13.3	393		16.....	33.2	1,041		
12.....	15.0	478		18.....	33.5	1,108		
16.....	21.6	672		20.....	33.8	1,068		
18.....	22.8	714		22.....	34.0	1,054		
19.....	23.0	721		24.....	34.1	1,117		
22.....	22.4	678		26.....	34.1	1,070		
26.....	20.7	609		29.....	34.0	1,088		
28.....	23.3	713		31.....	33.6	1,089		
31.....	27.3	828		April 2.....	32.5	999		
1880				3.....	32.9	951		
Jan. 3.....	28.8	954	5.....	29.7	850			
8.....	27.7	844	7.....	28.0	830			
9.....	27.4	810	9.....	24.7	777			
10.....	27.9	859	11.....	27.1	806			
13.....	30.2	976	13.....	26.6	754			
15.....	31.2	1,944	15.....	26.2	767			
17.....	32.0	1,066	17.....	24.6	680			
19.....	32.2	1,049	19.....	24.2	661			
21.....	32.0	1,027	21.....	24.5	700			
23.....	31.1	992	23.....	25.2	722			
26.....	27.9	807	24.....	25.4	729			
28.....	25.4	746	27.....	24.9	701			
31.....	21.3	572	29.....	23.9	667			
Feb. 3.....	18.2	489	May 1.....	24.9	737			
5.....	16.9	453	3.....	27.1	809			
7.....	15.5	397	4.....	27.8	851			
9.....	15.1	409	6.....	28.6	877			
12.....	14.1	370	8.....	29.0	895			
14.....	15.2	395	10.....	28.6	872			
16.....	21.6	629	11.....	28.0	823			
18.....	26.9	858	12.....	27.0	801			
20.....	29.1	951	13.....	25.7	755			
23.....	31.4	1,025	14.....	24.5	714			
25.....	32.3	1,035	15.....	23.2	633			
			17.....	20.6	533			
			18.....	19.4	499			

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT FULTON,
TENN.—*Continued*

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1880				1880			
May 19.....	18.3	462	F	Aug. 4.....	11.9	297	F
20.....	17.3	421		5.....	11.6	273	
21.....	16.7	421		6.....	11.2	259	
22.....	16.1	389		7.....	10.8	257	
24.....	15.8	390		9.....	10.2	243	
25.....	15.7	385		10.....	9.9	233	
26.....	15.6	378		11.....	9.8	224	
27.....	15.3	369		12.....	9.6	232	
28.....	15.2	369		13.....	9.5	227	
29.....	14.8	351		14.....	9.4	226	
31.....	14.8	362		16.....	9.2	219	
June 1.....	15.3	380		17.....	9.2	219	
2.....	16.0	399		18.....	9.0	214	
3.....	16.8	439		19.....	8.8	202	
4.....	17.4	451		20.....	8.6	199	
5.....	18.0	462		21.....	8.4	198	
7.....	18.4	485		23.....	7.9	187	
8.....	18.4	504		24.....	7.7	180	
9.....	18.6	492		25.....	7.3	178	
10.....	18.5	487		26.....	7.0	168	
11.....	18.3	476		27.....	6.7	161	
12.....	17.8	455		28.....	6.7	161	
14.....	17.4	452		30.....	7.4	179	
15.....	17.4	450		31.....	7.7	190	
16.....	17.1	432		Sept. 1.....	8.0	203	
17.....	16.7	437		2.....	8.4	203	
18.....	16.0	407		3.....	8.8	209	
19.....	15.8	397		4.....	9.0	220	
21.....	15.5	401		6.....	9.1	228	
22.....	16.3	428		7.....	9.5	241	
23.....	16.6	435		8.....	9.9	264	
24.....	17.2	454		9.....	10.1	252	
25.....	18.2	475		10.....	10.1	250	
26.....	18.7	507		11.....	10.2	256	
28.....	19.7	540		13.....	10.7	275	
29.....	20.2	550		14.....	10.9	270	
July 1.....	20.5	555	F	15.....	10.5	261	
2.....	20.3	541		16.....	10.2	253	
3.....	20.2	555		17.....	9.6	233	
5.....	21.3	590		18.....	9.0	218	
6.....	23.0	679		20.....	8.1	199	
7.....	24.0	726		21.....	7.8	193	
8.....	24.9	748		22.....	7.5	194	
9.....	25.9	895		23.....	7.4	188	
10.....	26.0	828		24.....	7.2	171	
12.....	26.1	793		26.....	6.7	167	
13.....	25.7	752		27.....	6.5	172	
14.....	25.2	715		28.....	6.4	157	
15.....	24.7	711		29.....	6.3	164	
16.....	23.9	666		Oct. 1.....	6.2	154	
17.....	23.3	637		2.....	6.2	156	
19.....	21.8	589		4.....	6.2	176	
20.....	21.0	565		5.....	6.6	170	
21.....	20.1	532		7.....	7.0	177	
22.....	19.4	505		8.....	7.1	181	
23.....	18.6	479		1884			
24.....	17.8	461		Feb. 25.....	35.7	1,411	
26.....	16.5	406		26.....	35.7	1,424	
27.....	16.0	394		Mar. 12.....	31.4	1,047	
28.....	15.5	373		19.....	31.8	1,275	
29.....	15.1	382		April 3.....	35.0	1,520	
30.....	14.6	373		25.....	30.6	1,213	
31.....	14.2	341		26.....	30.0	1,185	
Aug. 2.....	12.9	310	F	May 8.....	28.0	1,117	
3.....	12.5	305		9.....	28.4	1,122	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT FULTON,
TENN.—Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1884				1892			
May 9.....	28.4	931	F	April 15.....	33.0	1,192	F
24.....	21.2	591		16.....	33.1	1,151	
June 21.....	20.4	590		18.....	33.2	1,289	
Aug. 6.....	14.2	386		19.....	33.3	1,382	
Sept. 16.....	6.9	181		21.....	33.4	1,248	
Oct. 7.....	14.6	400		22.....	33.4	1,095	
Nov. 12.....	8.7	207		23.....	33.3	1,218	
18.....	7.6	203		25.....	33.5	1,099	
19.....	7.5	193		26.....	33.7	1,234	
21.....	7.4	196		27.....	33.8	1,267	
21.....	7.3	196		28.....	34.0	1,218	
26.....	6.9	172		29.....	34.2	1,226	
28.....	7.3	202		30.....	34.2	1,245	
Dec. 8.....	6.3	170		May 2.....	34.2	1,288	
9.....	5.8	173		3.....	34.2	1,283	
12.....	5.5	156		1893			
1885				Feb. 24.....	30.0	970	F
Jan. 9.....	22.2	669		25.....	30.5	1,051	
19.....	27.0	933		28.....	31.4	1,062	
Mar. 21.....	23.9	756	F	Mar. 1.....	31.7	1,131	
April 4.....	15.8	470	F	2.....	31.9	1,097	
16.....	23.5	737	F	4.....	32.2	1,216	
1887				6.....	31.8	1,088	
Feb. 25.....	33.9	1,122		7.....	31.1	1,057	
1891				May 5.....	32.8	1,120	
April 1.....	32.2	1,088	M	8.....	33.9	1,225	
				10.....	34.4	1,340	
				11.....	34.5	1,264	
				13.....	34.6	1,270	
				16.....	34.6	1,208	
				17.....	34.6	1,262	
				19.....	34.4	1,158	
				23.....	33.1	1,098	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT MEMPHIS, TENN.

Gage heights refer to U. S. Engineer gage at Memphis, whose zero is 184.21 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1882				1891			
Dec. 29.....	8.4	296	F	Oct. 2.....	3.0	118	M
31.....	9.8	323		3.....	2.8	115	
1883				5.....	2.4	121	
Jan. 2.....	10.4	346		6.....	2.2	110	
Feb. 20.....	32.8	1,167		8.....	1.9	101	
21.....	33.3	1,194		9.....	1.8	100	
1890				10.....	1.7	94	
Mar. 17.....	35.6	1,335		12.....	1.4	91	
18.....	35.5	1,273		13.....	1.3	98	
20.....	35.5	1,345		14.....	1.3	96	
22.....	35.6	1,232		15.....	1.4	97	
24.....	35.6	1,316		16.....	1.4	91	
25.....	35.6	1,292		17.....	1.6	97	
26.....	35.5	1,295		19.....	1.8	109	
27.....	35.4	1,264		21.....	2.0	104	
29.....	35.3	1,289		1892			
31.....	35.3	1,313	M	Oct. 25.....	1.9	109	F
April 1.....	35.4	1,205		1894			
1891				Nov. 8.....	-1.4	84	
May 6.....	34.0	1,278		10.....	-1.3	84	
7.....	34.3	1,232		1895			
10.....	34.9	1,289		Oct. 21.....	-1.7	88	
Sept. 29.....	3.6	125		22.....	-1.8	90	
30.....	3.4	120		1904			
Oct. 1.....	3.2	118		April 9.....	38.6	1,618	M & F

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT HAMPTON LANDING, ARKANSAS

Gage heights refer to local gage, whose zero is 4.40 feet below zero of the Memphis standard gage.

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1878				1879			
Dec. 27.....	16.9	485		April 24.....	22.8	656	
28.....	15.2	464		25.....	22.4	635	
1879				28.....	19.9	576	
Jan. 23.....	25.0	809		29.....	18.7	536	
24.....	26.4	838		May 2.....	15.7	435	
Feb. 2.....	26.7	811		8.....	10.6	329	
6.....	25.4	778		9.....	9.9	312	
6.....	25.3	783		10.....	9.3	290	
7.....	25.3	782		14.....	8.2	271	
8.....	25.7	801		15.....	8.0	266	
12.....	27.0	825		16.....	7.9	271	
15.....	25.4	772		17.....	7.8	268	
19.....	19.8	564		20.....	7.2	253	
20.....	18.2	537		21.....	7.1	255	
21.....	17.0	495		22.....	7.1	255	
24.....	17.7	524	F	23.....	7.0	255	
27.....	19.0	568		27.....	6.1	237	F
28.....	19.1	573		28.....	6.0	236	
Mar. 5.....	17.5	517		29.....	6.0	236	
6.....	17.2	511		June 5.....	9.0	300	
7.....	17.1	495		6.....	9.5	323	
12.....	16.4	489		7.....	10.0	327	
13.....	16.1	486		10.....	11.1	346	
19.....	19.8	581		11.....	11.0	344	
21.....	21.2	625		12.....	10.9	344	
22.....	21.8	647		13.....	10.8	348	
25.....	22.9	672		14.....	10.7	332	
28.....	24.6	734		16.....	10.1	335	
April 2.....	25.1	729		18.....	10.0	333	
5.....	24.5	719		19.....	10.0	328	
12.....	23.7	678		21.....	9.8	312	
15.....	23.3	668		23.....	10.0	322	
23.....	23.6	682		24.....	10.5	340	
				25.....	10.9	345	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT HELENA, ARK.

Gage heights refer to U. S. Engineer gage at Helena, whose zero is 141.81 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1879				1882			
April 4.....	33.2	729	F	Feb. 14.....	46.6	1,420	
May 12.....	16.3	305		15.....	46.6	1,348	
22.....	14.4	282		17.....	46.3	1,343	
June 3.....	14.2	295		18.....	46.1	1,400	
13.....	18.3	386		24.....	45.5	1,287	M
1882				25.....	45.5	1,238	
Jan. 21.....	41.7	1,088	R	28.....	45.5	1,247	
23.....	42.2	1,174		Mar. 2.....	45.6	1,241	
24.....	42.4	1,151		3.....	45.7	1,285	
25.....	42.6	1,181		7.....	47.0	1,506	
31.....	43.8	1,287		8.....	47.1	1,558	
Feb. 1.....	43.9	1,212	R	13.....	46.5	1,562	R
2.....	44.0	1,142		14.....	46.4	1,513	R
4.....	44.4	1,166		15.....	46.2	1,412	R
6.....	44.6	1,119	M	17.....	46.0	1,434	R
7.....	44.8	1,231		27.....	44.9	1,378	M
9.....	45.4	1,330		29.....	44.7	1,259	
11.....	46.0	1,317		30.....	44.5	1,306	
				31.....	44.4	1,317	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT HELENA, ARK.—
Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1882				1882			
April 3.....	43.8	1,241		July 14.....	39.8	1,908	
4.....	43.6	1,230		15.....	39.6	1,029	
6.....	43.3	1,210		17.....	39.1	911	
7.....	43.1	1,287		18.....	38.6	907	
8.....	42.8	1,282		19.....	38.0	898	
10.....	42.4	1,110		20.....	37.3	860	
11.....	42.1	1,162		22.....	35.4	800	
12.....	41.7	1,093		24.....	33.6	728	
13.....	41.4	1,073		25.....	32.8	724	
14.....	41.1	1,023		26.....	32.0	687	
15.....	40.8	965		27.....	31.0	660	
17.....	40.3	957		29.....	28.7	595	
19.....	40.0	959		31.....	26.2	540	
20.....	39.7	940		Aug. 1.....	25.2	502	M
21.....	39.9	949		2.....	24.2	463	
24.....	38.1	833		3.....	23.5	439	
25.....	37.3	803		5.....	22.6	422	
26.....	36.4	800		7.....	21.8	421	
27.....	35.6	766		8.....	22.0	417	
29.....	35.0	771		9.....	22.7	469	
May 1.....	35.0	767		10.....	23.6	481	
2.....	35.0	788		11.....	24.2	488	
3.....	35.1	760		12.....	24.5	500	
4.....	35.1	791		14.....	24.0	522	
5.....	35.2	801	M	16.....	23.4	456	
8.....	35.4	792		17.....	23.1	480	
9.....	35.6	856		18.....	22.6	467	
10.....	36.4	798		19.....	22.1	437	R
11.....	37.0	861		21.....	21.4	416	M
12.....	38.1	863		22.....	21.1	422	M
13.....	39.0	906		23.....	20.8	410	R
16.....	40.6	1,016		24.....	20.3	409	M
17.....	41.0	1,078		25.....	19.8	369	
18.....	41.2	1,077		26.....	19.2	354	
20.....	41.6	1,112		28.....	17.9	310	
22.....	41.8	1,104		29.....	17.3	325	
23.....	41.8	1,127		30.....	16.8	324	R
24.....	41.9	1,080		31.....	16.4	278	M
25.....	41.9	1,101		Sept. 2.....	15.8	277	R
26.....	41.8	1,086		5.....	15.6	267	
27.....	41.8	1,145		6.....	15.6	248	
29.....	41.8	1,090		8.....	15.8	302	M
30.....	41.6	1,117		9.....	15.8	297	R
June 1.....	41.3	1,095		11.....	16.2	293	M
2.....	41.2	1,065		13.....	16.3	318	M
3.....	41.1	1,044		15.....	16.0	331	
5.....	41.1	1,059		16.....	15.7	300	
8.....	41.3	1,037		18.....	15.0	271	R
10.....	41.3	1,077		19.....	14.9	269	R
12.....	41.4	1,075	M	20.....	15.2	274	R
16.....	41.0	1,029		22.....	17.1	328	R
20.....	39.2	958		23.....	17.9	308	M
21.....	38.8	944		25.....	17.9	354	R
22.....	38.8	934		26.....	17.3	331	
23.....	38.8	920		27.....	16.5	296	
27.....	39.6	978		28.....	15.7	267	
28.....	39.7	972		29.....	15.0	233	M
29.....	39.7	942		29.....	15.0	251	R
30.....	39.7	1,041	M	30.....	14.2	252	R
July 1.....	39.5	952		Oct. 2.....	13.0	242	R
3.....	39.2	979		3.....	12.6	202	M
5.....	38.8	968		3.....	12.6	224	R
7.....	38.8	949		4.....	12.2	220	
12.....	39.7	1,019		5.....	11.6	208	
13.....	39.8	991		5.....	11.6	197	M

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT HELENA, ARK.—

Continued.

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1882				1884			
Oct. 6.....	11.5	193	M	Nov. 17.....	10.3	229	}
6.....	11.5	203	R	18.....	10.0	224	
7.....	11.5	186	M	19.....	9.9	219	
7.....	11.5	197	R	20.....	9.7	205	
9.....	11.5	200	M	21.....	9.6	208	
9.....	11.5	201	R	22.....	9.5	212	
10.....	11.4	194	M	24.....	9.4	206	
10.....	11.4	197	}	25.....	9.3	210	
11.....	11.3	191		26.....	9.1	201	
14.....	11.1	188		27.....	8.9	196	
17.....	10.7	189		28.....	8.9	208	
19.....	10.4	174	}	29.....	9.1	205	
20.....	10.1	169		Dec. 1.....	10.5	218	}
20.....	10.1	168	R	2.....	10.8	222	
21.....	9.8	172	M	3.....	11.0	225	
21.....	9.8	164	R	4.....	10.8	219	
23.....	9.8	165	M	4.....	10.8	244	
23.....	9.8	165	R	5.....	10.6	217	
24.....	9.8	172	M	6.....	10.3	226	
24.....	9.8	162	R	8.....	9.0	188	
25.....	9.8	172	M	9.....	8.4	180	
25.....	9.8	164	R	9.....	8.3	180	
27.....	10.2	178	M	10.....	7.9	173	
28.....	10.2	186	M	11.....	7.5	170	
28.....	10.2	171	R	12.....	7.2	169	
31.....	10.3	185	R	13.....	7.2	169	
Nov. 8.....	10.9	206	}	15.....	8.5	193	
10.....	11.0	208		16.....	9.8	214	
11.....	11.1	211		17.....	10.9	226	
1884				18.....	12.1	248	
Oct. 4.....	16.2	386	R	19.....	13.2	264	
6.....	19.0	448	R	20.....	14.1	274	
8.....	20.2	423	M	22.....	15.2	296	
9.....	20.0	466	R	23.....	15.2	292	
10.....	19.5	396	M	30.....	15.1	304	
11.....	19.0	388	}	31.....	17.6	364	
13.....	18.0	367		1885			
14.....	17.8	373		Jan. 1.....	20.7	428	}
15.....	17.5	364		2.....	24.0	514	
16.....	17.6	355		3.....	26.9	605	
17.....	18.0	393		7.....	31.9	713	
18.....	18.3	356		7.....	32.0	690	
20.....	18.4	374		8.....	32.2	714	
21.....	18.4	369		9.....	32.5	707	
22.....	18.2	371		10.....	32.8	708	
23.....	17.8	346		12.....	33.6	754	
25.....	16.9	358		13.....	34.4	781	
27.....	16.3	334		14.....	35.0	792	
28.....	16.0	340		17.....	36.9	826	
29.....	16.1	335		19.....	37.6	850	
30.....	16.2	333		20.....	38.0	873	
31.....	16.4	338		21.....	38.3	907	
Nov. 1.....	16.3	333	}	22.....	38.7	918	
3.....	16.0	328		26.....	40.1	970	
4.....	15.8	329		27.....	40.4	987	
5.....	15.5	317		28.....	40.5	1,021	
6.....	15.2	324		29.....	40.6	1,013	
7.....	14.8	308		Feb. 2.....	38.5	879	
8.....	14.2	295		3.....	36.8	816	
10.....	13.1	283		4.....	34.9	726	
11.....	12.6	282		5.....	32.7	687	
12.....	12.1	267		6.....	30.9	622	
13.....	11.8	255		7.....	29.2	625	
14.....	11.3	249		9.....	27.0	557	
15.....	11.0	237					

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT HELENA, ARK.—
Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1885				1885			
Feb. 10.....	26.6	545		Dec. 25.....	10.2	252	
11.....	26.5	539		26.....	11.0	273	
12.....	26.7	552		27.....	11.4	274	
13.....	26.9	553		28.....	11.7	281	
14.....	27.0	541		29.....	12.0	289	
19.....	29.5	601		31.....	13.1	297	
20.....	29.4	599					
28.....	18.4	361		1889			
Mar. 2.....	16.8	334		Jan. 1.....	13.9	318	
3.....	16.5	328		3.....	15.3	342	
4.....	16.5	336		5.....	15.6	347	
5.....	16.8	337		7.....	14.9	327	
6.....	17.4	355		8.....	14.5	319	
7.....	18.3	370		9.....	14.5	332	
9.....	20.4	423		10.....	14.7	327	
10.....	21.9	457		11.....	15.4	358	
11.....	23.7	491		12.....	16.4	377	
12.....	25.8	571		14.....	19.6	450	
13.....	27.5	578		16.....	24.3	603	
14.....	28.7	631		17.....	25.6	630	
16.....	30.0	644		18.....	26.4	620	
17.....	30.7	667		19.....	27.0	640	
18.....	31.6	696		21.....	28.6	656	
19.....	32.4	717		22.....	29.5	685	
20.....	33.1	737		23.....	30.4	758	
23.....	33.6	738		24.....	31.2	774	
24.....	33.4	724		27.....	30.8	696	
25.....	33.2	696		28.....	30.1	705	
26.....	32.9	694		29.....	29.1	668	
27.....	32.3	681		30.....	28.1	620	
28.....	31.5	663		31.....	27.2	603	
30.....	29.6	614		Feb. 1.....	26.9	591	
31.....	28.3	560	M	2.....	26.9	598	M
April 1.....	26.9	536		4.....	27.8	643	
2.....	25.6	516		5.....	28.4	641	
3.....	24.7	504		6.....	29.0	658	
4.....	23.9	462		7.....	29.3	671	
7.....	23.1	453		8.....	29.3	684	
9.....	24.7	515		9.....	29.0	656	
10.....	26.2	542		11.....	27.0	592	
				12.....	25.6	556	
1888				13.....	23.9	517	
Nov. 28.....	26.7	565		16.....	18.6	389	
29.....	26.0	569		18.....	16.2	354	
30.....	25.0	548		19.....	15.2	338	
Dec. 1.....	23.8	519		20.....	14.5	322	
3.....	21.1	493		21.....	14.7	342	
4.....	19.9	457		22.....	16.6	383	
5.....	18.6	442		23.....	20.5	497	
6.....	17.3	418		25.....	26.0	611	
7.....	16.0	368		26.....	27.9	672	
8.....	14.7	334		27.....	29.5	724	
10.....	12.7	284		28.....	31.0	756	
11.....	11.8	266		Mar. 2.....	32.3	800	
12.....	11.1	273		4.....	32.1	746	
13.....	10.5	269		5.....	31.6	741	
14.....	10.0	253		6.....	31.1	706	
16.....	9.4	243		7.....	30.8	708	
17.....	9.4	246		8.....	30.4	678	
18.....	9.2	240		9.....	30.3	670	
19.....	9.1	240		11.....	29.5	635	
20.....	9.0	241		12.....	28.8	620	
21.....	8.9	237		13.....	27.9	602	
22.....	9.0	229		14.....	27.0	585	
24.....	9.6	241		15.....	26.1	556	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT HELENA, ARK.—
Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1889				1891			
Mar. 16.....	25.5	542	M	Mar. 20.....	44.2	1,422	F
18.....	24.4	523		21.....	44.3	1,455	
19.....	24.0	513		22.....	44.4	1,433	
20.....	23.6	505		23.....	44.4	1,421	
21.....	22.9	474		24.....	44.5	1,426	
22.....	22.3	460		25.....	44.7	1,426	
23.....	21.8	460		26.....	44.7	1,423	
25.....	21.8	466		28.....	44.7	1,434	
26.....	22.6	499		31.....	44.7	1,410	
27.....	23.8	518		April 1.....	44.6	1,407	
28.....	24.8	547		2.....	44.5	1,442	
April 1.....	25.2	555		3.....	44.5	1,410	
3.....	24.5	518		4.....	44.3	1,354	
5.....	23.4	504		6.....	44.1	1,356	
6.....	22.7	489		7.....	44.1	1,351	
8.....	22.9	468		8.....	44.0	1,352	
9.....	21.9	480		9.....	44.0	1,311	
10.....	21.8	479		10.....	44.0	1,351	
11.....	21.6	473		11.....	44.0	1,381	
13.....	20.8	443		13.....	44.0	1,381	
15.....	19.8	425		Sept. 30.....	4.7	142	
16.....	19.5	416		Oct. 1.....	4.4	128	
17.....	19.2	420		2.....	4.0	132	
18.....	18.8	397		3.....	3.7	125	
19.....	18.5	395		5.....	3.3	133	
20.....	18.4	385		6.....	3.0	127	
22.....	19.4	423		7.....	2.7	126	
23.....	20.2	427		8.....	2.5	118	
24.....	20.8	454		9.....	2.2	121	
25.....	21.4	464		10.....	2.0	119	
26.....	21.9	476		12.....	1.7	108	
27.....	22.7	497		13.....	1.6	105	
29.....	23.6	509		14.....	1.5	107	
30.....	23.2	502		15.....	1.4	106	
May 1.....	22.3	468		16.....	1.3	105	
2.....	20.8	437		17.....	1.4	108	
1890				19.....	1.8	117	
April 3.....	47.4	1,547	F	20.....	2.0	117	
4.....	47.4	1,570		21.....	2.2	119	
5.....	47.3	1,501		22.....	2.4	125	
7.....	47.2	1,461		23.....	2.5	125	
9.....	47.0	1,398		24.....	2.5	121	
10.....	47.0	1,405		26.....	2.4	123	
12.....	47.1	1,443		28.....	2.0	113	
14.....	47.2	1,466		29.....	1.9	115	
16.....	47.4	1,497		30.....	1.8	107	
17.....	47.5	1,519		31.....	1.7	104	
18.....	47.3	1,487		Nov. 2.....	1.6	115	
19.....	47.0	1,471		3.....	1.5	108	
21.....	46.0	1,368		4.....	1.4	108	
23.....	44.5	1,269		5.....	1.3	108	
Dec. 23.....	11.8	246		6.....	1.1	107	
24.....	11.2	239		7.....	1.0	104	
24.....	11.1	235		9.....	0.9	109	
26.....	10.2	223		10.....	1.0	106	
27.....	10.2	239		11.....	1.0	105	
1891				1892			
Mar. 11.....	43.5	1,323	F	April 18.....	42.6	1,074	M
12.....	43.6	1,365		19.....	42.7	1,040	
13.....	43.7	1,368		20.....	42.9	1,098	
17.....	44.0	1,378		21.....	43.2	1,114	
18.....	44.0	1,444		May 3.....	44.5	1,209	
19.....	44.1	1,389		4.....	44.6	1,206	
				5.....	44.8	1,261	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT HELENA, ARK.—
Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1892				1896			
May 6.....	44.9	1,256		Nov. 18.....	7.1	197	F
7.....	45.0	1,233		19.....	7.9	204	M
9.....	45.5	1,246		20.....	8.9	219	M
10.....	45.7	1,290		20.....	8.9	229	F
11.....	45.7	1,326		21.....	9.7	224	M
12.....	45.7	1,313		21.....	9.7	224	F
13.....	45.5	1,321		23.....	10.4	247	M
14.....	45.3	1,315		23.....	10.4	247	M
16.....	44.8	1,271		24.....	10.4	242	M
17.....	44.6	1,250		24.....	10.4	228	F
June 1.....	44.7	1,247					
2.....	44.7	1,194		1897			
3.....	44.7	1,177		Mar. 12.....	42.8	1,146	
4.....	44.6	1,180		13.....	43.5	1,154	
6.....	44.6	1,185	M	15.....	44.7	1,256	
7.....	44.6	1,177		16.....	45.4	1,281	
8.....	44.6	1,198		17.....	45.8	1,240	
9.....	44.7	1,203		19.....	47.7	1,371	
10.....	44.8	1,200		20.....	48.4	1,435	
11.....	44.9	1,222		20.....	48.4	1,365	F
13.....	45.0	1,207		22.....	49.0	1,486	M
14.....	45.1	1,227		22.....	49.9	1,481	F
15.....	45.1	1,231		Nov. 17.....	.4	99	
16.....	45.1	1,247		18.....	.6	101	M
17.....	45.1	1,210		18.....	.6	105	
18.....	45.0	1,255		18.....	.6	100	F
20.....	44.8	1,237		18.....	.6	102	F
21.....	44.6	1,191		19.....	1.0	107	
22.....	44.4	1,161		19.....	1.0	110	M
				19.....	1.0	108	
1893				19.....	1.0	108	F
May 9.....	43.1	1,190	M	20.....	1.5	114	M
10.....	43.3	1,210	M				
11.....	43.5	1,197	M	1898			
12.....	43.7	1,229	F	April 9.....	45.6	1,274	M
13.....	43.8	1,264	F	11.....	46.9	1,324	M
15.....	44.2	1,289	M	12.....	47.5	1,424	F
15.....	44.2	1,305	F	12.....	47.5	1,372	M
16.....	44.4	1,382	M	13.....	48.0	1,388	M
16.....	44.4	1,315	F	14.....	48.4	1,405	M
17.....	44.6	1,299	M	15.....	48.8	1,425	F
17.....	44.6	1,265	F	15.....	48.8	1,405	M
18.....	44.9	1,354	M	16.....	49.0	1,394	M
19.....	45.2	1,343	M				
19.....	45.2	1,313	F	1901			
20.....	45.7	1,421	M	Dec. 3.....	1.50	118	F
22.....	46.9	1,462	F	3.....	1.50	101	
23.....	47.5	1,594	M	3.....	1.53	105	M
23.....	47.5	1,556	F	3.....	1.53	106	
24.....	47.7	1,501	M	4.....	1.65	118	F
24.....	47.7	1,512	F	4.....	1.65	119	M
25.....	47.9	1,555	M	4.....	1.70	112	M
25.....	47.9	1,574	F	4.....	1.70	121	F
26.....	47.8	1,527	M	4.....	1.70	113	M
26.....	47.8	1,521	F	5.....	1.85	125	F
29.....	47.0	1,449	M				
29.....	47.0	1,465	F	1903			
31.....	45.9	1,385	M	Mar. 20.....	49.35	1,358	
June 1.....	45.8	1,413	M	21.....	49.70	1,401	
1.....	45.8	1,387	F	22.....	50.03	1,452	
2.....	45.7	1,386		23.....	50.40	1,480	
5.....	45.3	1,344	M	24.....	50.68	1,438	
				25.....	50.88	1,558	M
1895				25.....	50.90	1,686	F
Oct. 24.....	—1.7	93		26.....	51.00	1,534	M
24.....	—1.1	88					

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT HELENA, ARK.—

Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1904				1912			
April 6.....	43.29	1,145	M	April 6.....	52.2	1,544	MM
9.....	45.55	1,325		7.....	52.8	1,563	
10.....	46.30	1,336	F	8.....	52.2	1,573	
11.....	46.90	1,379		19.....	54.1	2,004	
12.....	47.23	1,405	M	21.....	54.3	1,966	M
13.....	47.48	1,406	F	22.....	54.3	2,016	
14.....	47.61	1,412	M	23.....	54.1	2,041	
15.....	47.62	1,370					
1906				1913			
April 14.....	46.08	1,178	M	Jan. 28.....	46.0	1,297	MM
15.....	46.42	1,224		28.....	46.3	1,357	F
16.....	46.70	1,212	F	30.....	47.2	1,370	MM
17.....	46.92	1,196		31.....	47.8	1,388	
18.....	47.03	1,259	M	Feb. 1.....	48.0	1,388	F
				2.....	48.4	1,440	
1907				4.....	48.8	1,426	MM
Jan. 28.....	45.6	1,318	M	5.....	48.9	1,454	
29.....	46.3	1,380		6.....	49.0	1,425	F
30.....	47.0	1,443	M	6.....	49.0	1,508	
Feb. 1.....	48.8	1,634		7.....	49.0	1,443	MM
3.....	49.9	1,691	M	9.....	48.8	1,402	
4.....	50.2	1,648		11.....	48.4	1,387	M
5.....	50.4	1,471	F	12.....	48.0	1,323	
6.....	50.4	1,478	F				
1908				1922			
Mar. 23.....	44.83	1,356	MM	Oct. 27.....	2.0	116	F
24.....	45.00	1,339	MM	28.....	2.0	111	F
25.....	45.12	1,228	M	29.....	1.8	136	M
26.....	45.18	1,247		30.....	1.8	127	
27.....	45.12	1,309	MM	31.....	1.6	121	F
28.....	45.00	1,244	MM	Nov. 1.....	1.6	132	
29.....	44.90	1,242	MM	2.....	1.6	108	M
30.....	44.58	1,225	F	3.....	1.6	110	
31.....	44.30	1,191	F	3.....	1.6	110	F
				4.....	1.5	109	
1909				5.....	1.4	121	M
Mar. 10.....	44.55	1,274	MM	6.....	1.1	105	F
11.....	45.15	1,334		7.....	1.1	105	F
12.....	45.60	1,267	F	8.....	1.0	102	F
13.....	45.88	1,358		9.....	.9	106	M
13.....	45.88	1,323	MM	10.....	.9	103	F
14.....	46.30	1,290	M	11.....	.8	104	M
15.....	46.53	1,313	M	12.....	.8	97	F
16.....	46.67	1,359	MM	13.....	.8	106	M
17.....	46.77	1,372		14.....	1.1	111	F
18.....	46.83	1,328	F				
18.....	46.87	1,387		1925			
19.....	46.98	1,379	MM	Sept. 11.....	.10	111	FF
20.....	47.18	1,356		12.....	— .10	102	FF
21.....	47.30	1,400	MM	12.....	— .10	104	M
22.....	47.47	1,405		13.....	— .10	108	FF
23.....	47.58	1,429	MM	14.....	— .20	109	MM
24.....	47.68	1,385		14.....	— .20	87	FF
1912				15.....	— .25	101	MM
April 2.....	48.8	1,338	M	15.....	— .20	95	FF
3.....	49.7	1,405	F	16.....	— .22	105	MM
4.....	50.6	1,489	M	16.....	— .22	98	FF

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT FRIAR POINT, MISS.

Gage heights refer to U. S. Engineer gage at Helena, Ark

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1913				1916			
April 6.....	49.3	1,486	MM	Feb. 8.....	52.6	1,706	F
7.....	50.6	1,560		9.....	53.0	1,543	MM
8.....	51.8	1,577	F	10.....	53.2	1,565	MM
10.....	53.4	1,664		11.....	53.4	1,660	F
11.....	53.6	1,807	MM	12.....	53.4	1,516	MM
12.....	53.6	1,667		1917			
13.....	53.7	1,682	F	Mar. 29.....	46.5	1,296	MM
14.....	53.8	1,700		31.....	47.3	1,380	F
15.....	53.9	1,831	MM	April 1.....	47.6	1,391	MM
16.....	54.0	1,659		2.....	47.9	1,374	M
17.....	54.2	1,697	F	3.....	48.0	1,326	M
18.....	54.4	1,729		3.....	48.0	1,419	F
19.....	54.7	1,749	MM	5.....	48.7	1,400	MM
19.....	54.7	1,761		6.....	48.8	1,388	MM
20.....	55.0	1,932	F	6.....	48.8	1,451	F
21.....	55.1	1,729		7.....	49.0	1,416	M
22.....	55.2	1,805	MM	8.....	49.3	1,432	M
24.....	54.8	1,712		9.....	49.5	1,470	MM
25.....	54.5	1,722		10.....	49.7	1,411	MM
1914				10.....	49.7	1,510	F
Dec. 6.....	1.5	124	MM	11.....	49.8	1,455	MM
7.....	1.6	138	F	12.....	49.9	1,461	M
7.....	1.6	127	MM	12.....	49.9	1,486	F
8.....	1.8	130	MM	13.....	49.9	1,474	M
9.....	2.1	140	F	14.....	49.8	1,398	MM
9.....	2.1	128	MM	14.....	49.8	1,504	F
10.....	2.2	135	M	Dec. 25.....	2.0	143	MM
11.....	2.6	159	F	1920			
11.....	2.6	144	M	April 2.....	47.40	1,453	MM
12.....	3.6	156	M	2.....	47.40	1,444	F
13.....	5.7	188	M	3.....	48.10	1,454	MM
14.....	8.2	233	M	5.....	49.40	1,535	
1916				7.....	49.95	1,533	F
Jan. 13.....	45.4	1,214	MM	7.....	49.95	1,598	
14.....	45.8	1,210		8.....	50.10	1,511	MM
15.....	46.2	1,244	MM	9.....	50.10	1,524	
16.....	46.5	1,253		10.....	50.00	1,446	
17.....	46.8	1,231		1922			
18.....	47.1	1,254	MM	Mar. 24.....	46.5	1,323	F
18.....	47.1	1,353	F	25.....	47.4	1,297	
19.....	47.4	1,273	MM	26.....	48.1	1,419	MM
20.....	47.8	1,355		27.....	49.1	1,388	
21.....	48.1	1,313	F	28.....	49.8	1,411	MM
22.....	48.6	1,310		29.....	50.3	1,492	
23.....	48.9	1,413	MM	30.....	50.9	1,517	MM
23.....	48.9	1,473		31.....	51.4	1,574	
24.....	48.9	1,368	F	April 1.....	51.8	1,563	M
24.....	48.9	1,438		2.....	52.0	1,584	
25.....	48.9	1,311	MM	3.....	52.3	1,612	F
26.....	48.8	1,313		4.....	52.3	1,612	
29.....	49.0	1,313	MM	5.....	52.3	1,586	
30.....	49.1	1,312		1927			
31.....	49.4	1,320		Mar. 30.....	50.50	1,330	M
Feb. 1.....	49.6	1,348	F	31.....	50.80	1,342	
2.....	50.0	1,368		31.....	50.80	1,365	F
3.....	50.3	1,410	MM	April 1.....	51.00	1,300	
3.....	50.3	1,524		2.....	51.00	1,289	M
4.....	50.8	1,408	MM	3.....	50.90	1,370	
5.....	51.3	1,410		4.....	50.70	1,348	F
6.....	51.8	1,488		5.....	50.60	1,334	
7.....	52.3	1,506		6.....	50.50	1,357	
8.....	52.6	1,525					

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT FRIAR POINT,
MISS.—Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1927				1927			
April 7.....	50.50	1,257	M	April 20.....	54.50	1,444	F
8.....	50.50	1,378		21.....	55.20	1,481	M
9.....	50.80	1,362		22.....	55.90	1,523	
10.....	51.00	1,366		23.....	56.20	1,631	
11.....	51.40	1,374		24.....	56.40	1,632	
12.....	51.80	1,280		25.....	56.60	1,634	F
13.....	52.20	1,292		26.....	56.70	1,698	
14.....	52.50	1,348		27.....	56.75	1,681	
15.....	53.00	1,363		28.....	56.70	1,522	
16.....	53.60	1,400		29.....	56.55	1,756	M
17.....	53.70	1,410		30.....	56.25	1,702	
18.....	53.90	1,411		May 1.....	55.75	1,709	
19.....	54.20	1,408		2.....	55.25	1,630	
				3.....	54.90	1,630	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT OLD TOWN BEND, NEAR
FRIAR POINT, MISS.

Gage heights refer to U. S. Engineer gage at Helena, Ark.

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1894			
Nov. 8.....	—2.2	77	M
8.....	—2.2	88	
9.....	—2.2	88	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT CHICOT, ARK.

Gage heights refer to gage of the Mississippi River Commission at Arkansas City, Ark.,
whose zero is 96.75 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1903				1906			
Mar. 16.....	50.4	1,743	M	April 15.....	48.65	1,460	M
17.....	50.8	1,576		16.....	48.95	1,413	M
18.....	51.2	1,475		17.....	49.25	1,442	F
19.....	51.6	1,657		18.....	49.55	1,423	M
20.....	51.9	1,649	M	19.....	49.70	1,462	M
21.....	52.2	1,584	M	19.....	49.70	1,442	F
21.....	52.3	1,618	F	20.....	49.85	1,412	M
22.....	52.4	1,607	M	21.....	49.95	1,464	F
23.....	52.6	1,598					
24.....	52.7	1,665		1907			
25.....	52.7	1,614		Jan. 14.....	44.9	1,226	M
25.....	52.8	1,657	F	15.....	45.6	1,236	
26.....	52.9	1,710		16.....	46.2	1,298	
				17.....	46.8	1,263	
1904				18.....	47.2	1,345	M
Apr. 11.....	45.8	1,231	M	18.....	47.2	1,312	F
12.....	46.5	1,284		19.....	47.5	1,352	M
13.....	47.1	1,305		21.....	47.9	1,341	
14.....	47.6	1,398		22.....	48.0	1,344	
15.....	48.0	1,362	M	22.....	48.0	1,332	F
16.....	48.4	1,368		23.....	48.1	1,317	
17.....	48.7	1,368		24.....	48.2	1,357	
18.....	48.9	1,357		26.....	48.5	1,387	
18.....	.....	1,383	F	28.....	49.0	1,384	M
19.....	49.0	1,377	M	Feb. 1.....	50.4	1,461	
20.....	49.0	1,403		2.....	50.8	1,524	
21.....	49.0	1,376		2.....	50.8	1,544	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT CHICOT, ARK.—*Continued*

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1907				1912			
Feb. 4.....	51.5	1,573	M	April 12.....	55.3	1,926	} MM
5.....	51.8	1,529	M	13.....	55.2	1,974	
5.....	51.8	1,608	F	13.....	55.2	1,980	
6.....	51.9	1,540	} M	14.....	55.1	1,937	
7.....	52.0	1,522		15.....	55.0	1,915	
8.....	52.1	1,519		15.....	55.0	1,935	
1908				16.....	55.0	2,007	
Mar. 7.....	46.83	1,324	} M	17.....	55.0	1,927	
8.....	47.06	1,318		17.....	55.0	1,790	
9.....	47.16	1,292		1913			
10.....	47.15	1,328	MM	Jan. 29.....	46.7	1,321	} F
12.....	47.05	1,306	MM	30.....	47.3	1,380	
12.....	.....	1,311	F	31.....	47.8	1,395	
13.....	46.99	1,256	} MM	Feb. 1.....	48.3	1,374	MM
15.....	46.93	1,279		2.....	48.6	1,419	MM
16.....	46.98	1,318		3.....	48.9	1,417	F
17.....	47.10	1,309	M	4.....	49.2	1,436	} MM
18.....	47.18	1,288	F	5.....	49.4	1,426	
1909				6.....	49.6	1,419	
Mar. 17.....	48.1	1,291	MM	7.....	49.8	1,472	} F
18.....	48.4	1,328	MM	8.....	49.8	1,464	
19.....	48.6	1,337	F	11.....	50.0	1,462	
20.....	49.0	1,340	MM	12.....	50.0	1,465	} MM
21.....	49.2	1,410	MM	13.....	49.9	1,514	
22.....	49.4	1,420	F	April 8.....	49.7	1,537	
23.....	49.6	1,472	} MM	9.....	50.6	1,463	} F
24.....	49.7	1,466		10.....	51.5	1,478	
25.....	49.8	1,468		11.....	52.3	1,587	} MM
26.....	49.9	1,514	} MM	11.....	52.3	1,617	
27.....	50.0	1,520		12.....	53.0	1,648	
28.....	50.1	1,512	MM	13.....	53.6	1,615	} MM
29.....	50.1	1,441	F	14.....	54.0	1,671	
1911				15.....	54.3	1,671	
April 28.....	47.0	1,184	} MM	16.....	54.5	1,714	} F
29.....	47.3	1,233		17.....	54.6	1,623	
30.....	47.6	1,239		17.....	54.6	1,688	F
May 1.....	47.8	1,249	F	19.....	54.9	1,679	MM
2.....	48.0	1,281	MM	19.....	54.9	1,683	F
3.....	48.0	1,238	MM	20.....	55.0	1,726	} MM
4.....	47.9	1,240	M	22.....	55.1	1,704	
1912				23.....	55.1	1,692	
April 1.....	49.4	1,614	MM	24.....	55.1	1,691	} F
2.....	50.2	1,423	M	24.....	55.1	1,773	
2.....	50.2	1,433	MM	25.....	55.1	1,741	
3.....	50.9	1,433	M	26.....	55.0	1,782	} MM
3.....	50.9	1,628	F	1916			
4.....	51.7	1,607	} MM	Jan. 23.....	51.3	1,427	} M
4.....	51.7	1,518		24.....	51.5	1,448	
5.....	52.4	1,541		24.....	51.5	1,497	M
5.....	52.4	1,674	} MM	25.....	51.8	1,408	MM
6.....	53.1	1,592		25.....	51.8	1,493	F
6.....	53.1	1,735		26.....	52.1	1,486	M
8.....	54.3	1,778	} F	26.....	52.1	1,461	MM
8.....	54.3	1,770		27.....	54.2	1,518	} M
9.....	54.6	1,813		29.....	53.1	1,604	
9.....	54.6	1,713	} MM	31.....	53.9	1,664	
10.....	54.9	1,829		Feb. 1.....	54.2	1,728	MM
10.....	54.9	1,855		2.....	54.5	1,680	MM
11.....	55.1	1,890	} F	3.....	54.8	1,747	F
11.....	55.1	1,810		4.....	55.0	1,768	} MM
				5.....	55.3	1,798	
				7.....	55.8	1,797	
				8.....	56.0	1,822	} MM
				9.....	56.2	1,847	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT CHICOT, ARK.—*Continued*

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1916				1922			
Feb. 10.....	56.4	1,889	} MM	April 13.....	57.0	1,625	} MM
11.....	56.4	1,864		14.....	57.1	1,622	
12.....	56.3	1,881		15.....	57.3	1,698	
13.....	56.3	1,794		17.....	57.5	1,642	
14.....	56.2	1,793		1923			
1917				Mar. 27.....	46.9	1,174	} F MM
April 3.....	48.9	1,346	MM	28.....	47.5	1,166	
5.....	49.7	1,401	M	29.....	47.9	1,174	
6.....	50.0	1,417	F	30.....	48.3	1,237	
7.....	50.3	1,427	MM	31.....	48.6	1,224	
9.....	50.9	1,447	M	April 2.....	49.0	1,213	} MM
10.....	51.2	1,498	MM	3.....	49.1	1,197	
11.....	51.3	1,527	M	4.....	49.4	1,203	
12.....	51.5	1,500	MM	1927			
12.....	51.5	1,491	MM	April 2.....	54.0	1,385	} M
12.....	51.8	1,518	M	3.....	54.2	1,342	
14.....	51.9	1,526	MM	4.....	54.3	1,457	
14.....	51.9	1,569	F	5.....	54.4	1,393	
15.....	52.0	1,551	M	6.....	54.5	1,440	
16.....	52.0	1,522	MM	8.....	54.7	1,445	
17.....	52.1	1,591	M	9.....	54.9	1,441	
18.....	52.1	1,534	MM	10.....	55.1	1,446	
18.....	52.1	1,557	M	11.....	55.3	1,483	
1919				13.....	55.7	1,490	
April 2.....	48.8	1,341	M	16.....	57.2	1,603	
2.....	48.8	1,324	F	17.....	57.6	1,610	
3.....	49.1	1,331	MM	18.....	58.1	1,615	
4.....	49.3	1,329	F	19.....	58.7	1,628	
5.....	49.4	1,378	MM	20.....	59.4	1,712	
5.....	49.4	1,356	MM	1928			
1920				July 1.....	51.77	1,330	MM
April 8.....	53.3	1,454	} MM	2.....	52.02	1,376	MM
9.....	53.7	1,486		3.....	52.22	1,424	M
10.....	53.9	1,494		4.....	52.32	1,421	M
10.....	53.9	1,495		6.....	52.42	1,316	M
11.....	54.0	1,475		6.....	52.42	1,399	F
12.....	54.0	1,513	} MM	7.....	52.42	1,341	MM
12.....	54.0	1,501		8.....	52.42	1,339	MM
13.....	54.0	1,430		9.....	52.42	1,395	M
1922				10.....	52.37	1,403	F
April 2.....	54.2	1,524	} F M MM	11.....	52.22	1,322	M
3.....	54.7	1,523		12.....	52.07	1,281	M
4.....	55.1	1,560		14.....	51.77	1,352	M
5.....	55.6	1,597		15.....	51.57	1,331	M
6.....	56.0	1,761		16.....	51.27	1,303	MM
7.....	56.3	1,609		17.....	50.98	1,302	MM
9.....	56.6	1,662		18.....	50.62	1,279	MM
10.....	56.7	1,632		19.....	50.21	1,261	F
12.....	57.0	1,639		20.....	49.57	1,215	M
				21.....	48.77	1,176	MM

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT ARKANSAS CITY, ARK.—
Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1885				1889			
Mar. 27.....	34.6	789	M	Mar. 23.....	26.9	524	M
28.....	34.3	819		25.....	26.2	518	
30.....	33.3	743		26.....	26.2	508	
31.....	32.6	715		27.....	27.1	549	
April 1.....	31.8	687		28.....	28.4	594	
2.....	30.8	669		29.....	30.2	627	
3.....	29.9	654		30.....	31.2	642	
4.....	28.9	618		April 1.....	32.1	662	
6.....	27.3	562		2.....	32.1	656	
7.....	26.9	561		4.....	31.8	657	
8.....	26.8	559		5.....	31.4	626	
9.....	27.1	567		6.....	30.9	618	
1887				8.....	29.9	584	
Mar. 22.....	46.6	1,427		9.....	29.4	590	
23.....	46.6	1,448		10.....	29.2	572	
24.....	46.6	1,480		11.....	28.9	575	
25.....	46.6	1,406		12.....	28.6	577	
26.....	46.6	1,424		13.....	28.1	546	
26.....	.....	1,411		15.....	27.1	519
1889				16.....	26.6	510	
Jan. 22.....	33.4	789		17.....	26.0	491	
23.....	34.1	894		18.....	25.4	479	
24.....	34.7	849		19.....	25.0	457	
28.....	35.2	901		20.....	24.6	446	
29.....	35.0	834		22.....	24.3	445	
30.....	34.6	845		23.....	24.5	455	
31.....	34.1	815		24.....	24.8	468	
Feb. 2.....	33.5	851		25.....	25.2	475	
4.....	33.3	795		26.....	25.6	476	
6.....	33.5	793		27.....	26.4	500	
7.....	33.8	781		29.....	27.9	525	
8.....	33.9	738		May 1.....	27.9	521	
9.....	33.8	773		1890			
11.....	33.1	721		Mar. 14.....	48.2	1,186	M
12.....	32.2	720		19.....	48.8	1,418	
14.....	30.0	625		25.....	49.2	1,229	
16.....	26.8	510		26.....	49.4	1,308	
19.....	22.7	416		28.....	49.2	1,223	
20.....	21.5	406		30.....	48.8	1,250	
21.....	20.6	405		31.....	48.8	1,272	
22.....	20.2	398		April 2.....	48.6	1,339	
23.....	21.0	434		4.....	48.3	1,221	
25.....	25.5	532		7.....	47.9	1,187	
26.....	27.6	587		9.....	48.0	1,220	
27.....	29.2	689		11.....	47.9	1,199	
28.....	30.7	635		13.....	47.8	1,335	
Mar. 2.....	32.8	699		15.....	47.8	1,284	
4.....	33.8	739		1891			
5.....	34.1	710		Mar. 6.....	45.0	1,278	M
6.....	34.5	748		7.....	45.3	1,255	
7.....	34.9	750		8.....	45.6	1,144	
8.....	35.0	745		9.....	45.6	1,250	
9.....	35.0	728		10.....	45.8	1,287	
11.....	34.6	731		11.....	46.1	1,212	
12.....	34.2	719		12.....	46.4	1,156	
13.....	33.6	698		13.....	46.5	1,165	
14.....	32.9	679		14.....	46.6	1,148	
15.....	32.1	668		16.....	46.9	1,209	
16.....	31.3	634		17.....	46.9	1,219	
19.....	29.0	585		18.....	47.0	1,193	
20.....	28.6	561		19.....	47.1	1,162	
21.....	28.0	560		20.....	47.3	1,182	
22.....	27.5	535		21.....	47.3	1,214	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT ARKANSAS CITY, ARK.—

Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1891				1892			
Mar. 22.....	47.4	1,234		23.....	49.4	1,475	F
23.....	47.5	1,211		24.....	49.5	1,424	
24.....	47.6	1,253		26.....	49.6	1,445	
28.....	47.8	1,391		27.....	49.6	1,429	
30.....	47.9	1,419		28.....	49.7	1,446	
31.....	48.0	1,424		31.....	49.8	1,441	
April 1.....	48.1	1,409		31.....	49.8	1,485	
3.....	48.2	1,419		June 1.....	49.9	1,485	
4.....	48.2	1,406		3.....	49.7	1,477	
6.....	48.2	1,407		4.....	49.6	1,452	
7.....	48.2	1,425		6.....	49.5	1,416	
8.....	48.1	1,398		7.....	49.4	1,463	
9.....	48.0	1,407		8.....	49.4	1,465	
10.....	47.9	1,363		9.....	49.4	1,484	
11.....	47.8	1,342		10.....	49.4	1,481	
13.....	47.6	1,298		11.....	49.4	1,462	
14.....	47.5	1,339		13.....	49.4	1,451	
15.....	47.4	1,303		14.....	49.4	1,446	
16.....	47.3	1,317		14.....	49.4	1,423	
18.....	47.2	1,292		15.....	49.4	1,408	
20.....	47.2	1,269		16.....	49.4	1,451	
21.....	47.2	1,289		17.....	49.3	1,436	
22.....	47.1	1,270		18.....	49.2	1,422	
23.....	47.1	1,283		20.....	49.0	1,404	
24.....	47.2	1,237		20.....	49.0	1,401	
25.....	47.3	1,228		21.....	48.8	1,395	
27.....	47.5	1,228		21.....	48.8	1,356	
28.....	47.4	1,247		23.....	48.5	1,344	
29.....	47.3	1,201	M	24.....	48.3	1,360	
30.....	47.1	1,189		27.....	47.5	1,201	
May 2.....	46.5	1,186		28.....	47.2	1,179	
4.....	45.6	1,136		28.....	46.9	1,298	
6.....	43.9	1,023		29.....	46.6	1,262	
7.....	43.0	986		29.....	46.6	1,180	
8.....	41.7	937		30.....	46.1	1,046	
9.....	40.5	874		30.....	46.0	1,065	
11.....	38.2	818		30.....	46.1	1,192	
12.....	37.0	796		30.....	46.1	1,184	F
1892				July 1.....	45.5	1,158	M
Apr. 22.....	46.0	1,311		1.....	45.5	1,142	F
23.....	46.4	1,450		1.....	45.4	1,025	M
25.....	46.9	1,385		1.....	45.3	1,077	F
26.....	47.1	1,526		2.....	44.6	1,110	
27.....	47.2	1,597		2.....	44.6	1,033	
28.....	47.4	1,525		1893			
29.....	47.6	1,547		Mar. 9.....	43.1	1,054	
30.....	47.8	1,587		9.....	43.1	1,072	
May 2.....	48.0	1,625		10.....	43.2	1,036	
3.....	48.0	1,533		10.....	43.2	1,054	
4.....	48.1	1,734		11.....	43.2	1,009	
4.....	48.1	1,742		11.....	43.2	1,026	
5.....	48.2	1,589		13.....	43.0	1,106	
6.....	48.3	1,648		18.....	40.7	1,007	
7.....	48.6	1,614		20.....	40.2	931	
9.....	48.8	1,660		21.....	40.0	960	
10.....	48.8	1,601		21.....	40.0	935	
11.....	48.9	1,493		22.....	39.9	983	
12.....	49.0	1,556		24.....	3.99	939	
13.....	49.1	1,467		25.....	40.0	946	
14.....	49.1	1,410	M	25.....	40.0	916	
16.....	49.1	1,452	F	27.....	40.0	931	
19.....	49.2	1,465	M	27.....	40.0	932	
21.....	49.3	1,406	M	29.....	39.9	911	
23.....	49.4	1,435	M	29.....	39.9	921	

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT ARKANSAS CITY, ARK.—
Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1893				1893			
Mar. 30.....	39.6	928	M	June 3.....	49.6	1,486	
30.....	39.6	928		5.....	49.6	1,469	
31.....	39.4	907		5.....	49.6	1,480	
April 1.....	39.0	863		7.....	49.5	1,453	
1.....	39.0	866	M	7.....	49.5	1,433	
3.....	38.0	836					
3.....	38.0	827		1895			
4.....	37.4	821		July 8.....	14.0	283	M
4.....	37.4	814	M	8.....	14.0	302	
4.....	37.4	820	F	9.....	15.6	321	
5.....	36.6	791	M	Aug. 12.....	18.6	352	
5.....	36.6	809	M	12.....	18.6	354	
6.....	35.8	763		Oct. 12.....	— .7	103	
6.....	35.8	758		12.....	— .7	121	
7.....	35.0	738		14.....	—1.0	105	
7.....	35.0	721	M	Dec. 24.....	9.0	232	
8.....	34.2	711		26.....	15.6	363	
8.....	34.2	711		26.....	15.6	364	
May 5.....	46.2	1,198		27.....	20.4	454	
6.....	46.8	1,243	M	27.....	20.4	468	
8.....	48.1	1,329		28.....	23.9	550	
8.....	48.1	1,327		30.....	27.3	664	
9.....	48.4	1,372		31.....	28.2	678	
9.....	48.4	1,349					
10.....	48.8	1,380		1896			
10.....	48.8	1,378		Jan. 1.....	28.8	662	F
11.....	49.0	1,406		2.....	29.5	698	
11.....	49.0	1,390		3.....	30.2	796	
12.....	49.1	1,407		4.....	30.6	717	
12.....	49.1	1,400		4.....	30.6	725	
13.....	49.2	1,428		6.....	30.8	696	
13.....	49.2	1,408		6.....	30.8	700	
15.....	49.6	1,453		8.....	29.4	678	
15.....	49.6	1,416		9.....	28.3	657	
16.....	49.6	1,428		10.....	27.6	628	
17.....	49.6	1,411		10.....	27.6	631	
17.....	49.6	1,384		11.....	27.2	626	
18.....	49.6	1,451		11.....	27.2	608	
18.....	49.6	1,429		Dec. 4.....	11.9	285	
19.....	49.6	1,438		5.....	14.2	343	
19.....	49.6	1,455		5.....	14.2	358	
19.....	49.6	1,472		5.....	14.2	361	
20.....	49.6	1,442		7.....	18.2	456	
20.....	49.6	1,426		7.....	18.2	467	
22.....	49.6	1,409		8.....	20.0	490	
22.....	49.6	1,482		9.....	21.0	504	
23.....	49.7	1,434		9.....	21.0	515	
23.....	49.7	1,421		9.....	21.0	499	
24.....	49.8	1,471	M	1897			
24.....	49.8	1,432		Mar. 25.....	50.8	1,596	M
24.....	49.8	1,408		26.....	51.1	1,597	M
25.....	50.0	1,440		27.....	51.4	1,646	M
25.....	50.0	1,455		29.....	51.9	1,618	M
26.....	50.0	1,417		30.....	51.4	1,613	F
26.....	50.0	1,486		Nov. 26.....	.5	126	M
27.....	50.0	1,676		27.....	.6	134	
27.....	50.0	1,566		27.....	.6	133	
29.....	50.2	1,538		29.....	.8	131	
29.....	50.2	1,542		29.....	.8	134	
31.....	49.8	1,504		29.....	.8	136	M
June 1.....	49.6	1,503		29.....	.8	134	M
1.....	49.6	1,468		29.....	.8	134	M
2.....	49.6	1,496		30.....	.9	136	F
2.....	49.6	1,508					
3.....	49.6	1,483					

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT ARKANSAS CITY, ARK.—
Continued

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1897				1922			
Nov. 30.....	.9	132	F	Nov. 1.....	2.5	132	M
30.....	.9	137	M	2.....	2.4	120	F
1898				3.....	2.3	122	M
April 20.....	51.1	1,497	M	4.....	2.3	119	F
20.....	51.1	1,514	F	7.....	2.2	123	M
1901				8.....	2.1	115	F
Dec. 8.....	1.4	119	M	9.....	1.9	119	F
8.....	1.4	118	M	10.....	1.8	121	M
8.....	1.5	119	M	11.....	1.6	111	F
9.....	1.6	131	F	13.....	1.5	113	M
9.....	1.7	127	M	15.....	1.6	119	F
10.....	1.8	126	F	1925			
10.....	1.8	129	F	Sept. 11.....	2.3	128	} M
10.....	1.8	128	M	12.....	2.0	123	
10.....	1.9	123	M	13.....	1.8	116	
10.....	1.9	120	M	14.....	1.6	123	
1903				14.....	1.6	120	F
Mar. 8.....	48.0	1,292	} M	15.....	1.5	113	M
11.....	48.8	1,286		16.....	1.4	112	M
12.....	49.0	1,198		16.....	1.4	119	F
1917				17.....	1.5	112	M
Dec. 24.....	2.9	138	} F	17.....	1.5	122	F
26.....	3.7	150		18.....	1.5	114	M
26.....	3.7	153		18.....	1.5	120	F

DISCHARGE MEASUREMENTS OF MISSISSIPPI RIVER AT GREENVILLE, MISS.

Gage heights refer to Mississippi River Commission gage at Greenville, Miss., whose zero is 88.53 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1894							
April 19.....	28.1	740	} M				
19.....	28.2	671					
Nov. 20.....	— .5	104					

ST. FRANCIS RIVER

DISCHARGE MEASUREMENTS OF ST. FRANCIS RIVER AT PARKIN, ARK.

Gage heights refer to Mississippi River Commission gage at Parkin, whose zero is 175.68 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1928							
June 21.....	19.7	16,656	F	7.....	24.6	22,269	F
22.....	20.2	17,800	M	8.....	24.7	23,270	M
23.....	21.6	20,966	F	9.....	24.9	21,536	F
24.....	22.2	19,327	M	10.....	25.0	23,658	M
25.....	22.5	18,383	F	11.....	25.2	21,964	F
26.....	22.8	18,369	M	12.....	25.2	22,601	M
27.....	22.9	18,223	F	13.....	25.3	21,705	F
28.....	23.1	21,643	M	14.....	25.3	23,180	M
29.....	23.2	18,928	F	15.....	25.3	23,649	F
30.....	23.5	20,022	M	16.....	25.3	21,589	M
July 1.....	23.7	21,398	F	17.....	25.3	19,856	F
2.....	23.9	20,812	M	18.....	25.1	21,522	M
3.....	24.1	23,129	F	19.....	25.0	19,377	F
4.....	24.2	22,617	M	20.....	24.7	20,434	M
5.....	24.3	21,601	F	21.....	24.3	17,774	F
6.....	24.4	22,699	M				

DISCHARGE MEASUREMENTS OF ST. FRANCIS RIVER NEAR MOUTH.

Gage heights refer to U. S. Engineer gage at Memphis, Tenn.
K. C. S. & M. Ry.

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1890				15½ miles above mouth.			
Mar. 17-19.....	35.5	487,536	M	Gage heights refer to U. S. Engineer gage at Helena, Ark.			
28, 29.....	35.5	484,111	M				
St. L., I. M. & S. Ry.				1898			
1890				Dec. 17.....	11.0	6,039	
Mar. 21-22.....	35.5	578,817	M	17.....	11.0	6,233	
L. R. & M. Ry.				17.....	11.0	6,175	M
1890				17.....	11.0	6,093	
April 1, 3.....	35.4	501,225	M	17.....	11.0	6,113	
Soudan, Ark.				19.....	10.5	7,204	F
Gage height refers to U. S. Engineer gage at Helena, Ark.				19.....	10.5	6,986	F
				19.....	10.5	7,279	M
				19.....	10.5	7,656	M
				15 miles above mouth.			
1916				1896			
Jan. 21.....	48.1	17,506	F	Nov. 16.....	7.1	874	M
Westbrook, Ark., 20 miles above mouth.				17.....	6.9	768	M
Gage height refers to Mississippi River Commission gage at Mhoon Landing, Miss.				17.....	6.9	1,007	F
				17.....	6.9	824	M
1884				17.....	6.9	1,012	F
Mar. 4.....	38.8	136,651	Ship's log				

DISCHARGE MEASUREMENTS OF ST. FRANCIS RIVER NEAR MOUTH.—*Continued*

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
8 miles above mouth.				$\frac{1}{4}$ -mile above mouth.			
1909				1897			
April 14.....	31.5	28,811	F	Nov. 16.....	.2	1,005	} M
				16.....	.2	955	
				16.....	.2	955	
1913				16.....	.2	972	} F
Feb. 14.....	46.6	60,134	MM	16.....	.2	988	
14.....	46.6	66,351	F	16.....	.2	990	
14.....	46.6	62,017	MM	16.....	.2	986	} M
15.....	45.4	73,610	MM	16.....	.2	998	
15.....	45.4	76,340	F	16.....	.2	998	
15.....	45.4	75,340	MM	16.....	.2	1,027	} F
15.....	45.4	84,829	F	16.....	.2	1,062	

DISCHARGE MEASUREMENTS OF ST. FRANCIS BAY AT MOUTH AT RIVER FRONT, ARK.

Gage heights at 8 a. m. readings of Mississippi River Commission gage on St. Francis River at Parkin, Ark.

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1928				1928			
June 23.....	21.6	1,906	} F	July 17.....	25.3	6,007	F
July 5.....	24.3	1,752		18.....	25.1	4,889	M
13.....	25.3	4,978		19.....	25.0	6,007	F
14.....	25.3	3,929	M	20.....	24.7	5,250	M
15.....	25.3	5,294	F	21.....	24.3	5,402	F
16.....	25.3	4,837	M				

WHITE RIVER

DISCHARGE MEASUREMENTS OF WHITE RIVER AT LOCK NO. 1, NEAR BATESVILLE, ARK.

Gage heights refer to U. S. Weather Bureau gage at Newport, Ark., whose zero is 199.2 feet above mean sea level.

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1900							
June 1.....	5.1	8,290	} F	27.....	15.3	33,659	} F
Nov. 2.....	5.4	8,802		27.....	15.0	32,674	
3.....	8.2	15,662		28.....	14.1	28,515	
6.....	7.8	15,189		28.....	13.8	29,963	
22.....	12.3	26,943					

DISCHARGE MEASUREMENTS OF WHITE RIVER AT CLARENDON, ARK.

Gage heights refer to Mississippi River Commission gage at Clarendon, whose zero is 140.02 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1879				1892			
Feb. 5.....	22.0	34,025	F	May 19.....	28.5	105,412	M
6.....	22.3	34,113		20.....	28.9	111,082	
7.....	22.6	37,208		21.....	29.3	119,124	
8.....	22.8	37,996		23.....	30.4	141,693	
11.....	23.3	39,405		24.....	31.1	155,019	
12.....	23.3	39,263		25.....	31.8	171,062	
15.....	23.2	37,394		26.....	32.3	172,357	
18.....	22.7	35,925		27.....	32.6	169,777	
19.....	22.4	33,447		28.....	32.7	172,903	
20.....	22.1	32,372					
27.....	18.6	21,726		1893			
Mar. 3.....	16.6	18,741		May 5.....	29.8	131,402	M
4.....	16.1	17,503		6.....	30.7	144,267	
5.....	15.6	17,075		8.....	32.7	180,392	
12.....	12.9	14,009		9.....	33.4	109,464	
15.....	12.8	13,934		10.....	33.8	201,870	
19.....	13.8	16,215					
21.....	14.3	17,201		1906			
24.....	15.8	18,982		April 4.....	32.40	205,351	F
25.....	15.9	18,664		6.....	33.08	210,040	
27.....	16.0	18,629		7.....	32.84	199,493	
29.....	15.5	17,377		8.....	32.46	196,107	
31.....	14.7	14,865		9.....	32.00	185,406	
April 2.....	14.4	15,332		9.....	32.00	189,386	
5.....	14.6	15,403		10.....	31.50	175,650	
8.....	15.4	16,105		10.....	31.50	175,956	
12.....	16.8	20,439					
15.....	16.9	20,002		1907			
16.....	16.8	20,203		Jan. 10.....	32.5	172,675	M
18.....	16.2	18,196		11.....	32.4	106,177	
26.....	15.4	16,148		12.....	32.3	160,916	
28.....	16.0	18,385		13.....	32.2	161,149	
29.....	16.1	18,398		14.....	32.2	160,713	
30.....	16.1	18,340		15.....	32.0	146,049	
May 1.....	16.3	20,163		16.....	32.0	148,510	
2.....	16.8	20,683		17.....	32.0	153,709	
5.....	18.3	24,051		18.....	32.0	151,732	
6.....	18.7	24,880					
7.....	9.0	26,072		1912			
8.....	19.2	26,359		April 14.....	32.6	172,219	M
9.....	19.3	26,055		15.....	32.5	149,753	
10.....	19.3	25,634		16.....	32.4	147,402	
13.....	18.5	23,295					
14.....	17.9	22,570		1915			
15.....	17.2	20,543		Aug. 30.....	29.77	150,558	MM
16.....	16.3	19,035		31.....	31.62	180,630	
17.....	15.5	17,881		Sept. 2.....	32.97	201,549	
19.....	13.8	14,920		3.....	32.97	184,369	
22.....	12.7	13,823		3.....	32.97	185,819	
23.....	12.6	13,657		4.....	32.32	174,316	MM
26.....	11.8	12,346					
27.....	11.4	11,596		1916			
28.....	10.9	11,019		Feb. 7.....	38.3	322,439	M
29.....	10.4	10,373		8.....	38.4	320,381	
June 3.....	8.7	8,500		9.....	38.1	310,546	
6.....	8.3	7,565					
7.....	8.3	8,082		1927			
9.....	8.7	8,664		April 18.....	32.85	188,115	F
10.....	8.8	8,609		23.....	43.30	439,648	F
12.....	8.6	8,208					
13.....	8.4	8,036		1928			
16.....	7.7	7,167		June 19.....	29.0	131,873	F
18.....	7.2	6,879		20.....	29.9	145,199	M
19.....	7.0	6,635		22.....	31.2	167,423	M
20.....	6.8	5,962					

DISCHARGE MEASUREMENTS OF WHITE RIVER AT CLARENDON, ARK.—*Continued*

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1928				1928			
June 23.....	31.8	178,305	F	July 1.....	34.9	226,665	M
24.....	32.3	186,743	M	2.....	34.8	219,090	F
26.....	33.4	207,903	M	3.....	34.6	210,098	M
27.....	33.8	217,913	M	4.....	34.2	201,327	M
28.....	34.2	224,206	F	5.....	33.7	191,280	M
29.....	34.6	228,981	M	6.....	33.1	176,684	F
30.....	34.8	230,252	M				

DISCHARGE MEASUREMENTS OF WHITE RIVER NEAR MOUTH

Gage heights refer to U. S. Engineer gage at mouth of White River, whose zero is 108.86 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
Above Arkansas cut-off.				Below Arkansas cut-off.			
1896				1882			
Nov. 27.....	13.5	8,664	} M	Mar. 28.....	46.2	117,599	
28.....	13.5	10,168		Above Sibley chute.			
28.....	13.5	9,893		1918			
28.....	13.5	11,398	F	Sept. 3.....	13.1	8,457	
28.....	13.5	12,221	F	3.....	13.1	9,036	
28.....	13.5	10,320	} M	Below Sibley chute.			
28.....	13.5	10,493		1918			
28.....	13.5	10,486		Sept. 3.....	13.1	7,060	
28.....	13.5	11,336	F	3.....	13.1	6,370	
28.....	13.5	11,395	F				
1897							
Nov. 23.....	5.6	4,759	} M				
23.....	5.6	4,684					
23.....	5.6	4,733					
23.....	5.6	4,749					
23.....	5.6	4,701					
23.....	5.6	4,523					
23.....	5.6	4,668					
23.....	5.6	4,362					
23.....	5.6	4,459	F				
23.....	5.6	4,498	F				

ARKANSAS RIVER

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT ARKANSAS CITY, ARK.

Gage heights refer to gage of the Mississippi River Commission at Arkansas City, Ark., whose zero is 96.75 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1884				1884			
Oct. 6.....	16.6	455	M	Dec. 26.....	16.8	365	M
7.....	18.0	485		29.....	15.0	340	
8.....	19.2	535		30.....	16.8	376	
9.....	20.0	539		31.....	20.3	458	
10.....	20.6	552		1885			
13.....	20.2	482		Jan. 1.....	23.3	557	M
14.....	19.5	447		2.....	26.1	637	
15.....	18.8	428		3.....	28.7	720	
16.....	18.4	406		7.....	35.6	892	
17.....	18.2	427		9.....	36.8	969	
18.....	18.1	414		10.....	37.3	981	
20.....	18.5	495		12.....	38.1	1,016	
21.....	18.5	419		13.....	38.5	969	
22.....	18.4	414		14.....	39.0	1,045	
23.....	18.2	418		16.....	40.3	1,117	
24.....	18.0	394		17.....	40.6	1,068	
25.....	17.6	375		19.....	41.0	1,101	
27.....	16.8	376		20.....	41.2	1,070	
28.....	16.4	357		22.....	41.4	1,072	
29.....	16.2	354		23.....	41.5	1,092	
30.....	16.0	352		31.....	41.7	1,064	
Nov. 31.....	16.3	352		Feb. 2.....	41.6	1,077	
1.....	16.5	366		3.....	41.3	1,050	
3.....	16.4	352		4.....	40.8	1,026	
4.....	16.2	359		5.....	39.9	981	
5.....	16.1	362		6.....	38.7	930	
6.....	16.0	359		7.....	37.5	868	
7.....	15.7	345		9.....	35.1	787	
8.....	15.2	338		11.....	33.6	743	
10.....	14.0	313		12.....	33.2	730	
11.....	13.4	299		13.....	32.9	753	
12.....	12.8	296		14.....	32.7	768	
13.....	12.2	285		16.....	32.2	734	
14.....	11.7	269		17.....	32.2	759	
15.....	11.2	268		18.....	32.2	735	
17.....	10.2	254		20.....	32.2	758	
18.....	9.8	243		21.....	32.0	726	
19.....	9.5	262		23.....	30.5	669	
20.....	9.2	241		24.....	29.6	626	
21.....	9.0	250		27.....	25.4	519	
22.....	8.9	253		28.....	24.0	484	
24.....	8.9	260		Mar. 2.....	22.1	470	M
25.....	8.8	243		3.....	21.8	458	
26.....	8.7	246		4.....	21.8	476	
27.....	8.6	238		5.....	21.8	459	
Dec. 29.....	8.7	241		6.....	22.2	471	
1.....	9.8	259		7.....	22.8	491	
2.....	10.7	283		9.....	23.8	504	
3.....	11.4	288		10.....	24.5	534	
4.....	11.9	292		11.....	25.5	543	
5.....	12.0	287		12.....	26.7	568	
8.....	10.3	260		13.....	28.1	630	
9.....	9.6	252		14.....	29.3	631	
10.....	8.8	248		16.....	30.9	698	
12.....	7.8	234		17.....	31.4	717	
13.....	7.4	221		18.....	32.0	742	
15.....	8.8	243		19.....	32.7	767	
16.....	10.9	286		20.....	33.4	779	
17.....	12.8	321		21.....	34.0	774	
19.....	16.6	365		23.....	34.8	788	
20.....	17.6	390		24.....	34.8	801	
22.....	18.4	415		25.....	34.9	792	
23.....	18.4	393		26.....	34.8	802	
24.....	18.1	397					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT LITTLE ROCK, ARK.

Gage heights refer to U. S. Engineer gage at Little Rock, whose zero is 222.06 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1885				1898			
.....	20.6	110,413		May 10.....	28.80	585,524	F
1886				11.....	29.30	676,756	
Dec. 6.....	4.7	4,365		12.....	28.80	657,859	
1887				13.....	28.00	535,032	
Oct. 3.....	3.4	6,601		1899			
8.....	3.0	5,279		Oct. 31.....	3.5	2,300	
Nov. 8.....	2.8	3,111		1903			
12.....	2.6	2,639		June 2.....	26.00	234,464	M
Dec. 7.....	11.4	38,367		3.....	26.10	282,128	M
1888				1904			
Jan. 2.....	4.4	7,127		June 10.....	29.2	415,426	M
13.....	6.2	14,035		10.....	29.2	427,699	M
17.....	7.2	14,720		11.....	29.4	408,644	M
Feb. 4.....	9.8	33,410		11.....	29.4	440,080	F
Mar. 6.....	10.4	37,746		12.....	29.4	433,238	F
9.....	12.8	48,651		12.....	29.3	425,954	M
28.....	15.2	65,274	F	13.....	29.1	416,284	F
April 9.....	7.3	19,607		13.....	29.0	398,313	M
13.....	15.1	62,127		13.....	29.0	394,967	
14.....	17.2	92,198		14.....	28.7	385,956	
16.....	18.6	98,233		14.....	28.5	354,047	
18.....				15.....	28.1	335,901	M
21.....	10.0	34,889		July 15.....	26.2	281,575	
25.....	7.6	17,607		16.....	26.4	289,505	
28.....	6.8	16,294		16.....	26.4	277,979	
May 2.....	18.6	98,233		17.....	26.2	269,123	
3.....	19.3	105,094		17.....	26.3	268,559	
21.....	18.6	99,026		18.....	25.9	216,209	
24.....	18.9	92,725		18.....	.....	239,065	F
June 15.....	16.7	71,318		18.....	.....	230,904	F
16.....	14.6	52,315		19.....	25.4	252,970	M
18.....	11.7	31,920		19.....	.....	229,010	F
23.....	9.2	21,197		1908			
27.....	16.8	86,995		April 15.....	24.90	284,395	
Aug. 18.....	4.0	6,618		16.....	24.80	256,353	
29.....	5.2	6,541		16.....	24.50	218,418	
Sept. 4.....	13.2	55,638		17.....	23.70	209,209	
1892				17.....	23.50	184,214	M
May 23.....	30.0	456,565	F	May 29.....	27.60	325,586	
24.....	29.4	410,829	F	30.....	27.75	361,029	
1893				30.....	27.75	375,625	
May 6.....	25.2	196,907	SF	31.....	27.60	367,225	
7.....	23.8	182,413		June 1.....	27.40	348,832	
8.....	22.5	158,279		2.....	27.12	354,309	
9.....	22.2	141,821		3.....	26.75	268,832	
10.....	22.5	148,817		4.....	26.45	252,183	
1894				4.....	26.45	244,385	
Nov. 23.....	3.4	2,597		5.....	26.48	256,582	
1895				6.....	26.75	240,924	
Aug. 4.....	18.75	132,247	F	1909			
1897				Sept. 3.....	2.3	3,913	
Oct. 12.....	2.8	1,522		4.....	2.3	4,262	
20.....	2.6	1,160		Oct. 14.....	1.9	3,573	
21.....	2.6	1,195		14.....	1.9	3,595	
22.....	2.6	1,190		15.....	1.8	3,206	
				15.....	1.8	3,308	
				16.....	1.8	3,303	
				16.....	1.8	3,155	

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT LITTLE ROCK,
ARK.—Continued

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1909				1916			
Oct. 22.....	1.4	2,974		Jan. 31.....	28.1	419,006	
22.....	1.4	2,708		Feb. 1.....	28.6	451,848	F
1910				1.....	.....	442,482	
Nov. 1.....	1.1	2,778		2.....	28.8	458,255	
1.....	1.1	2,850		3.....	28.7	437,554	
14.....	.9	2,170		4.....	27.9	393,976	
14.....	.9	2,212		Oct. 7.....	1.1	3,378	
26.....	.7	2,133		7.....	1.1	3,209	
26.....	.7	2,062		28.....	1.2	3,609	
Dec. 16.....	.6	1,724		28.....	1.2	3,595	
16.....	.6	1,754		Nov. 16.....	.8	2,609	
1912				16.....	.8	2,576	
May 4.....	25.4	321,105	F	18.....	.7	2,496	
5.....	25.0	288,650		18.....	.7	2,526	
6.....	24.4	278,733		29.....	4.6	14,134	
6.....	23.9	248,882		29.....	4.6	13,598	
1913				29.....	4.6	12,012	
Aug. 11.....	1.1	2,950		1917			
11.....	1.1	2,850		Feb. 7.....	1.5	4,092	
19.....	.6	1,848		13.....	1.0	3,589	
19.....	.6	1,736		March 5.....	7.8	29,374	
27.....	.3	1,301		6.....	7.5	29,228	
27.....	.3	1,240		6.....	.....	30,776	
29.....	.2	1,208		8.....	6.3	20,770	
29.....	.2	1,184		April 24.....	8.5	39,506	
Sept. 2.....	.2	1,096		25.....	9.1	38,967	
9.....	—2	1,058		25.....	.....	40,089	
9.....	—2	1,115		26.....	8.6	35,437	
1915				26.....	.....	35,003	
June 2.....	26.7	277,522	F	30.....	7.4	26,512	
3.....	26.1	289,864		July 2.....	2.5	8,797	
3.....	.....	286,716		Oct. 15.....	.5	2,730	
3.....	.....	275,190		15.....	.5	2,727	
4.....	25.3	244,541		16.....	.5	2,718	
4.....	.....	240,386		16.....	.5	2,651	
4.....	.....	244,468		17.....	.4	2,551	
4.....	.....	241,748		17.....	.4	2,571	
5.....	24.1	210,584		25.....	—3	1,692	
5.....	.....	206,121		25.....	—3	1,788	
6.....	22.3	182,651		25.....	—3	1,784	
6.....	.....	185,381		25.....	—3	1,772	
6.....	.....	186,834		1918			
6.....	.....	181,148		April 3.....	.6	3,847	
7.....	21.9	171,399		3.....	.....	3,849	
7.....	.....	167,604		8.....	8.0	32,718	
7.....	.....	167,404		8.....	8.0	32,866	
8.....	21.6	171,615		11.....	6.8	27,049	
8.....	.....	174,828		11.....	6.8	25,216	
1916				18.....	7.9	32,998	
Jan. 25.....	24.0	277,840		May 13.....	18.3	214,558	
26.....	23.9	269,460		13.....	18.3	221,905	
26.....	.....	270,023		14.....	20.1	222,911	
27.....	23.5	272,938		14.....	.....	215,336	
27.....	.....	261,058		15.....	18.3	143,323	
28.....	24.2	292,008		15.....	.....	145,304	
29.....	25.8	309,147		15.....	.....	136,323	
29.....	.....	308,625		15.....	.....	134,154	
29.....	.....	330,537		16.....	16.7	126,038	
30.....	27.0	378,209		16.....	.....	127,473	
30.....	.....	389,734		16.....	.....	121,832	
				16.....	.....	118,462	
				18.....	13.5	75,302	
				18.....	.....	70,609	

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT LITTLE ROCK, ARK.—*Continued*

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1918				1923			
July 27.....	—1	2,688		June 17.....	26.4	285,746	M
July 27.....	.....	2,661		18.....	26.7	299,841	F
Aug. 5.....	—2	2,294		18.....	.....	298,767	MM
5.....	.....	2,373		19.....	26.7	289,741	MM
10.....	—3	2,045		20.....	26.4	275,596	F
10.....	.....	2,060					
13.....	—5	1,684		1927			
13.....	.....	1,747		April 18.....	32.1	616,695	SF
17.....	—6	1,595		19.....	32.9	717,986	
17.....	.....	1,593		21.....	34.4	813,290	
				22.....	34.3	735,306	
1920				23.....	33.8	658,742	
Mar. 3.....	2.8	9,162		24.....	32.8	612,669	
3.....	.....	9,267					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT WHITE BLUFF, ARK.

1917							
July 16.....	1.0	3,356					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT JEFFERSON COUNTY FREE BRIDGE, ARK.

1917							
July 28.....	4.0	14,203					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT PINE BLUFF, ARK.

Gage heights for 1879 refer to a local gage whose relation to the present gage is not known. Late gage heights refer to Pine Bluff gage.

1879				1879			
Feb. 20.....	12.6	26,949	F	Mar. 26.....	9.6	15,674	F
21.....	12.3	24,167		27.....	9.3	14,910	
22.....	12.0	23,101		28.....	9.0	13,260	
24.....	11.2	19,645		29.....	8.7	12,292	
25.....	10.6	17,893		31.....	8.2	10,284	
26.....	10.4	17,979		April 1.....	8.1	10,141	
27.....	10.1	17,261		2.....	7.9	10,036	
28.....	10.0	16,282		3.....	8.1	10,348	
Mar. 1.....	10.0	16,450		4.....	8.4	11,502	
3.....	9.9	16,392		5.....	8.6	12,323	
4.....	9.8	16,245		7.....	8.3	11,422	
5.....	9.6	14,772		8.....	8.1	10,118	
6.....	9.4	14,470		9.....	8.3	10,589	
7.....	9.2	13,500		10.....	9.1	14,823	
8.....	9.0	13,578		11.....	9.5	14,951	
10.....	8.6	12,649		12.....	9.8	15,435	
11.....	8.6	11,349		14.....	9.1	14,199	
12.....	8.6	11,362		15.....	8.5	11,944	
13.....	8.9	13,079		16.....	8.2	11,144	
14.....	9.3	15,136		17.....	7.9	10,446	
15.....	9.6	15,020		18.....	8.0	10,564	
17.....	9.7	15,676		19.....	8.2	11,548	
18.....	9.4	15,545		21.....	7.7	9,431	
19.....	9.6	16,333		22.....	7.6	9,130	
20.....	9.9	16,841		23.....	7.4	8,212	
21.....	9.8	16,578		24.....	7.3	8,760	
22.....	9.6	15,291		26.....	7.6	9,240	
24.....	9.3	14,880		28.....	7.8	9,524	
25.....	9.6	15,318		29.....	8.3	11,756	

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT PINE BLUFF,
ARK.—*Continued*

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1879				1879			
April 30.....	11.6	22,797	F	June 12.....	7.1	8,140	F
May 1.....	15.2	45,268		13.....	6.7	6,981	
2.....	15.7	48,358		14.....	6.4	6,191	
3.....	15.6	47,265		16.....	6.0	5,522	
5.....	14.5	40,296		17.....	5.9	4,746	
6.....	14.5	39,756		18.....	5.8	4,477	
7.....	15.5	47,262		19.....	5.6	3,974	
9.....	17.4	63,754		20.....	5.5	3,971	
12.....	15.9	46,707		21.....	5.4	3,882	
15.....	12.3	25,738		23.....	5.3	4,038	
17.....	10.8	19,950		24.....	5.3	4,035	
20.....	9.2	14,116		25.....	5.3	3,822	
23.....	8.4	11,771		26.....	5.4	4,115	
24.....	8.2	11,271		27.....	5.6	4,500	
26.....	7.6	10,227		28.....	5.6	4,432	
27.....	7.4	9,103		30.....	6.0	4,819	
28.....	7.2	8,555		July 1.....	6.5	6,363	
29.....	7.0	8,338		2.....	6.8	7,561	
30.....	6.8	7,595		3.....	6.8	7,551	
31.....	6.7	7,133		4.....	6.7	7,347	
June 2.....	6.6	7,059		5.....	6.7	7,513	
3.....	6.5	6,467					
4.....	6.4	6,550		1899			
5.....	6.5	6,528		Nov. 3.....	2.1	2,521	
6.....	7.0	7,222					
7.....	8.8	12,875		1916			
9.....	8.9	13,886		Oct. 31.....	3.9	3,684	
10.....	8.2	11,435		31.....	3.9	3,560	
11.....	7.6	9,488					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT RICHLAND, ARK.

1917							
Aug. 27.....	7.9	36,659					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT HANNABERRY, ARK.

1917							
Dec. 11.....	1.3	6,507					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT DIAMOND POINT, ARK.

1916				1916			
Sept. 30.....	2.1	5,966		Oct. 7.....	1.1	3,727	
30.....		5,127		7.....		3,729	
Oct. 4.....	1.5	4,268		12.....	1.0	3,270	

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT PLUM ISLAND, ARK.

1917							
Sept. 28.....	1.0	4,372					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT PENDLETON, ARK.

1899				1916			
Nov. 4.....	4.4	2,820		Oct. 28.....	1.2	3,657	
				28.....		3,828	
1916				31.....	1.2	4,211	
Oct. 21.....	1.0	3,796					
25.....	1.3	3,633		1917			
27.....	1.2	4,120		Dec. 4.....	— .6	2,372	

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT NOTRIEB BEND, ARK.

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1916							
Nov. 6.....	.9	3,219					
6.....	.....	3,235					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT MEDFORD, ARK.

1916				1917			
Nov. 7.....	.9	3,248		Oct. 18.....	.4	3,906	
7.....	.....	3,342					
8.....	.9	3,186					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT HOPEDALE LANDING, ARK.

Gage heights refer to gage whose zero is 125.3 feet above mean Gulf level.

1896				1896			
Nov. 30.....	1.0	5,309	M	Dec. 1.....	1.19	5,719	} M
30.....	1.0	5,426	M	1.....	1.22	5,709	
Dec. 1.....	1.1	6,046	F	1.....	1.25	6,092	} F
1.....	1.12	5,878	F	1.....	1.27	6,079	
1.....	1.15	5,681	M	1.....	1.3	5,901	

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT M., H. & L. RAILWAY, BRIDGE, ARK.

1917							
Oct. 25.....	— .3	3,071					
Nov. 30.....	— .8	2,092					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT SAWMILL BEND, ARK.

1916				1917			
Nov. 21.....	.7	3,162		Jan. 2.....	3.5	9,415	
21.....	.....	3,028					

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT ROSEMARY, ARK.

1916				1917			
Nov. 11.....	1.0	3,159		Nov. 2.....	— .7	2,753	

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT HEAD OF ARKANSAS CUT-OFF, ARK.

1916				1917			
Nov. 11.....	1.0	3,416		Jan. 2.....	3.5	9,856	
				Nov. 2.....	— .7	2,787	

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT NAPOLEON, ARK.

Gage heights for 1857-58 refer to Humphrey and Abbot's Delta Survey gage at Napoleon. The gage height for 1882 refers to U. S. Engineer gage at mouth of White River, whose zero is 108.86 feet above mean Gulf level.

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.
1857				1858			
Dec. 29.....	38.9	65,193		June 5.....	44.6	148,210	
				6.....	44.7	141,130	
				8.....	45.0	142,680	
				9.....	45.1	144,580	
1858				10.....	45.2	145,110	
Jan. 1.....	36.0	58,637		14.....	45.3	142,420	
6.....	31.9	45,221		15.....	45.3	141,770	
15.....	34.8	56,917		20.....	45.2	142,810	
16.....	35.3	57,342		21.....	45.2	140,950	
17.....	35.0	59,478		30.....	44.7	137,120	
18.....	34.8	56,079		July 8.....	44.7	145,740	
19.....	34.4	54,688		13.....	43.8	132,510	
20.....	32.9	52,771		14.....	43.6	128,590	
21.....	33.7	51,421		15.....	43.3	120,520	
22.....	33.5	50,208		16.....	42.8	115,380	
25.....	32.6	49,571		17.....	42.1	109,880	
26.....	33.1	51,627		18.....	41.4	98,803	
27.....	33.5	51,932		July 21.....	39.4	81,280	
Feb. 25.....	27.2	42,139		26.....	38.1	74,297	
26.....	26.8	41,340		27.....	38.1	73,786	
Mar. 6.....	25.4	38,898		Aug. 1.....	37.8	72,316	
9.....	27.8	48,030		2.....	37.3	59,937	
10.....	28.3	54,537		3.....	35.9	55,188	
14.....	30.6	58,199		5.....	34.8	46,854	
18.....	31.0	58,515		8.....	32.2	33,544	
21.....	33.5	62,328		9.....	31.8	33,430	
24.....	37.2	74,505		11.....	30.8	29,312	
26.....	39.8	77,937		14.....	28.8	25,772	
28.....	41.4	82,736		16.....	27.6	26,121	
31.....	44.0	90,305		17.....	27.1	24,688	
April 2.....	45.0	90,948		18.....	26.8	24,497	
3.....	45.1	99,835	F	20.....	26.1	23,096	F
4.....	45.2	102,680		21.....	25.6	21,402	
5.....	45.3	105,240		22.....	25.1	16,489	
6.....	45.4	190,180		29.....	21.6	8,284	
7.....	45.4	102,850		30.....	20.8	7,561	
8.....	45.1	102,420		31.....	19.7	6,823	
15.....	40.2	71,074		Sept. 2.....	18.4	6,317	
16.....	39.9	67,249		4.....	17.9	6,238	
17.....	39.5	65,259		5.....	17.8	6,212	
26.....	42.1	84,066		6.....	17.7	6,160	
27.....	42.4	101,440		7.....	17.2	5,826	
May 1.....	43.4	114,780		10.....	15.6	5,408	
2.....	43.7	115,380		11.....	15.1	5,123	
6.....	44.1	117,050		12.....	14.6	5,078	
7.....	44.1	118,970		13.....	14.1	4,761	
8.....	44.1	118,470		15.....	13.3	4,367	
9.....	44.1	119,390		16.....	13.2	4,367	
10.....	44.1	120,060		17.....	13.1	4,307	
11.....	44.1	115,380		18.....	13.5	4,644	
12.....	43.9	129,080		19.....	14.1	4,602	
13.....	43.8	112,320		20.....	14.6	4,754	
16.....	43.9	119,480		21.....	15.1	4,732	
17.....	43.9	120,420		22.....	15.6	4,927	
19.....	44.2	122,210		23.....	16.2	4,927	
23.....	44.2	124,320		24.....	16.7	5,147	
27.....	44.2	125,130		25.....	16.6	5,098	
29.....	44.2	119,860		26.....	16.1	5,098	
30.....	44.3	120,590		27.....	15.5	5,193	
June 1.....	44.4	134,910		28.....	15.1	4,887	
2.....	44.4	140,430		Oct. 1.....	12.5	4,436	
3.....	44.4	138,930		2.....	12.1	4,164	
4.....	44.5	143,480		3.....	11.7	5,133	

DISCHARGE MEASUREMENTS OF ARKANSAS RIVER AT NAPOLEON, ARK.—
Continued

Date.	Gage height, in feet.	Discharge, in sec.-ft.	Method.	Date.	Gage height, in feet.	Discharge, in thousand sec.-ft.	Method.
1858				1858			
Oct. 4.....	11.3	3,884	F	Nov. 4.....	4.6	2,318	F
5.....	11.0	3,771		5.....	5.1	2,394	
6.....	10.5	4,021		6.....	6.1	2,774	
7.....	10.1	3,755		11.....	12.1	8,678	
14.....	8.5	3,412		12.....	13.4	9,935	
15.....	8.3	3,153		13.....	14.1	14,040	
16.....	8.1	3,276		14.....	14.5	12,333	
17.....	7.9	3,219		19.....	14.8	12,565	
18.....	7.7	3,219		20.....	14.3	11,650	
19.....	7.5	3,102		21.....	13.5	11,007	
20.....	7.3	2,933		22.....	12.3	9,450	
21.....	7.1	2,933		23.....	11.1	8,428	
22.....	7.0	2,915		24.....	9.7	7,409	
24.....	6.7	2,805		25.....	8.3	6,672	
25.....	6.5	2,753		26.....	7.5	6,040	
28.....	5.9	2,598		27.....	6.1	4,489	
29.....	5.7	2,546		28.....	5.6	3,958	
30.....	5.5	2,514		29.....	5.1	3,545	
31.....	5.3	2,348		30.....	5.1	3,379	
Nov. 1.....	5.2	2,348		1882			
2.....	5.1	2,333		Mar. 28.....	46.2	62,000	SF
3.....	5.0	2,333					

RED RIVER

DISCHARGE MEASUREMENTS OF RED RIVER AT KYE SMITH, ARK.

Gage height refers to U. S. Engineer gage at Fulton, Ark., whose zero is 224.48 feet above mean Gulf level.

1893							
Aug. 26.....	9.6	8,617	M				

DISCHARGE MEASUREMENTS OF RED RIVER AT DOOLEY FERRY, ARK.

Gage height is above mean Gulf level.

1893							
Sept. 1.....	219.8	4,450	M				

DISCHARGE MEASUREMENTS OF RED RIVER AT GARLAND, ARK.

Gage heights refer to U. S. Engineer gage at Garland, whose zero is 203.16 feet above mean Gulf level.

1893				1902			
Sept. 15.....	3.0	2,472	M	Nov. 15.....	.....	18,627	

DISCHARGE MEASUREMENTS OF RED RIVER ABOVE SULPHUR RIVER, ARK.

Gage height is above mean Gulf level.

1894							
Sept. 24.....	189.8	2,154	M				



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